VOLUME 56

The JOURNAL of the AMERICAN OSTEOPATHIC ASSOCIATION

Mar. 1957

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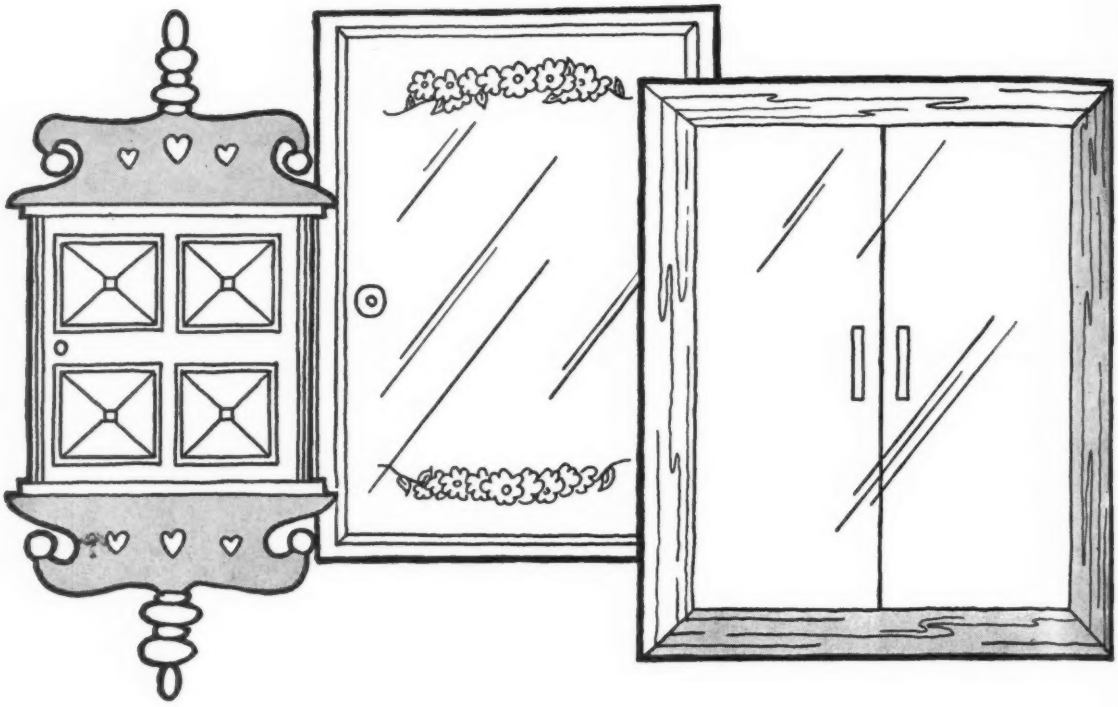

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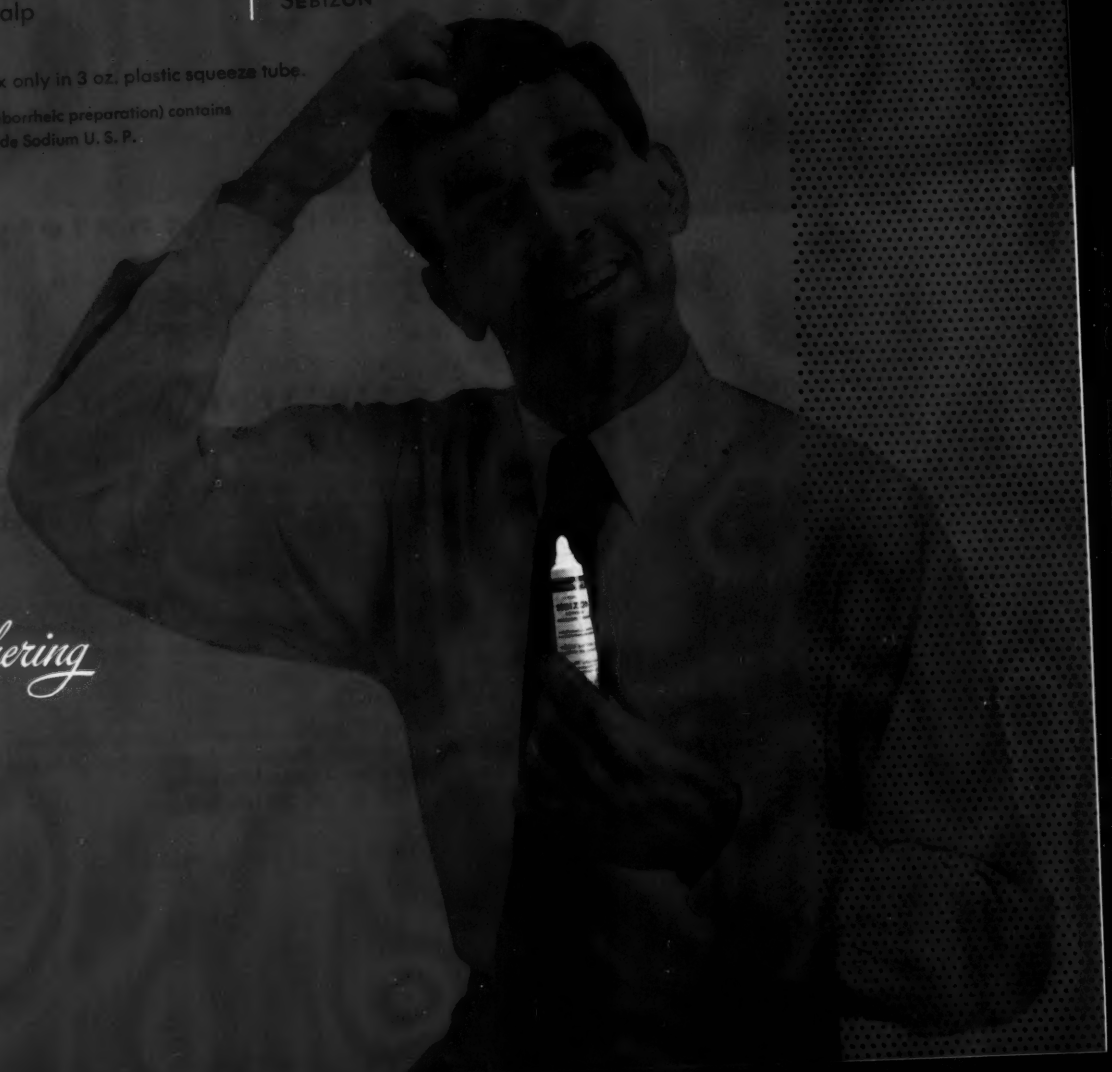

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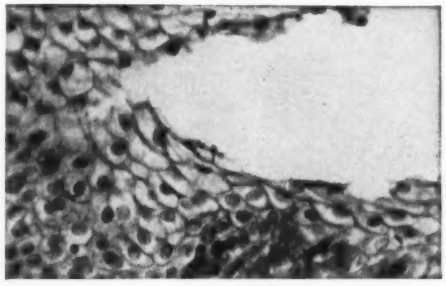

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References: **1.** Davis, C. H., and Grand, C. G.: Am. J. Obst. & Gynec. 68:559 (Aug.) 1954. **2.** Davis, C. H.: J.A.M.A. 157:126 (Jan. 8) 1955. **3.** Davis, C. H.: West. J. Surg. 63:58 (Feb.) 1955. **4.** Davis, C. H. (Ed.): Gynecology and Obstetrics (revision), Hagerstown, W. F. Prior, 1955, vol. 3, chap. 7, pp. 23-33. **5.** Lanceley, F., and McEntegart, M. C.: Lancet 1:668 (Apr. 4) 1953.

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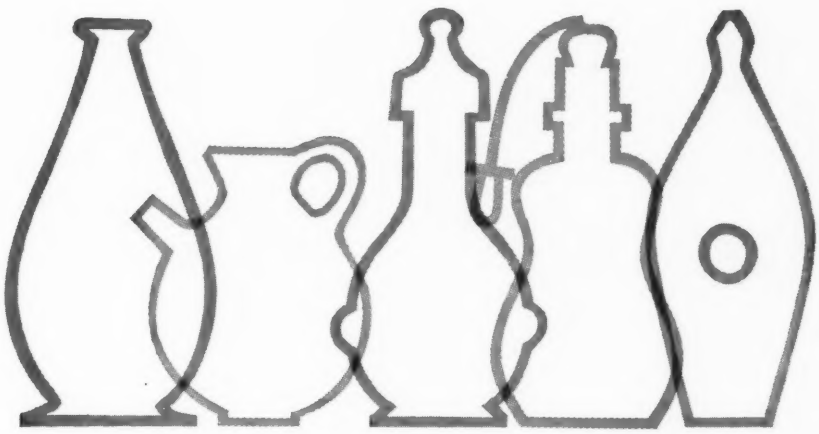

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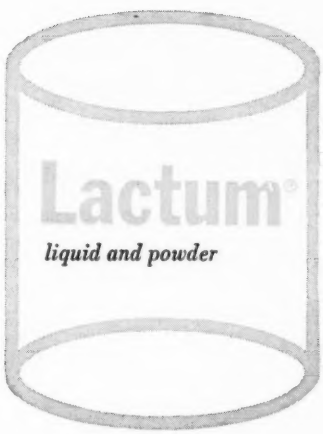

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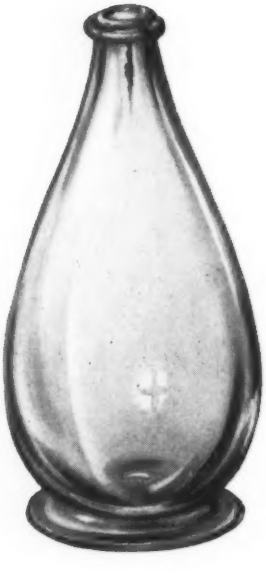

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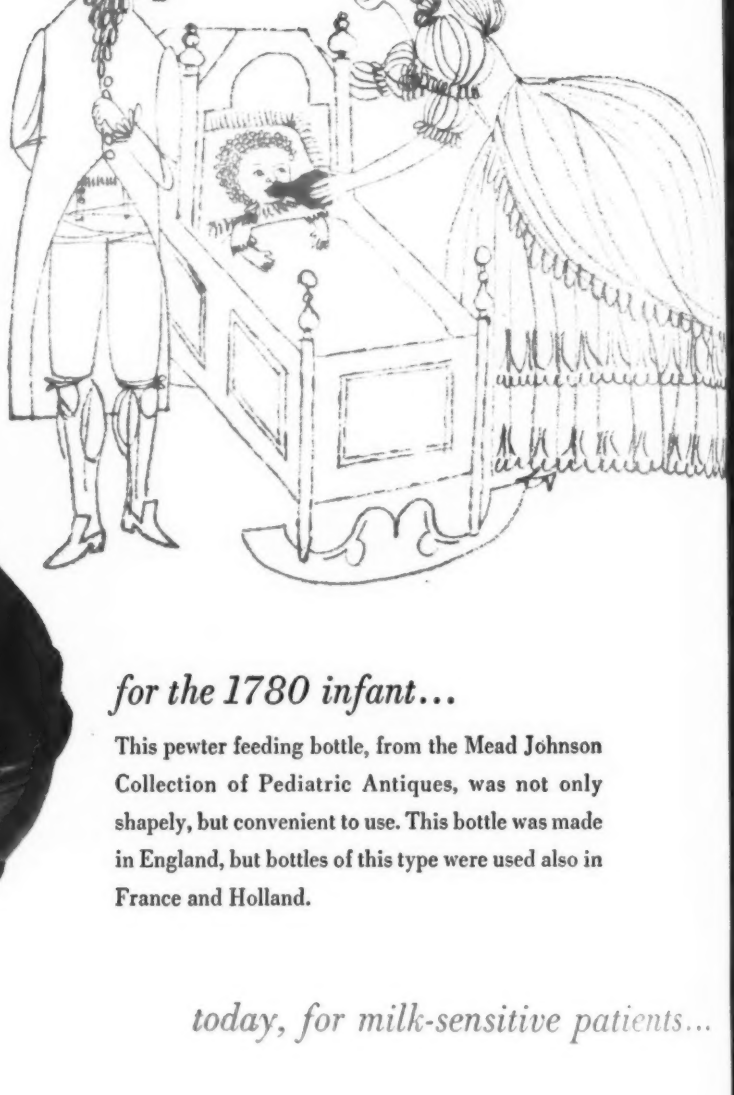

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1. Klemme, H. L.: Clin. Med., October, 1956.

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1. Bacala, J.C.: The Use of the Systemic Hemostat, Carbazochrome Salicylate, West. J. Surg. *64*:88 (Jan., 1956)

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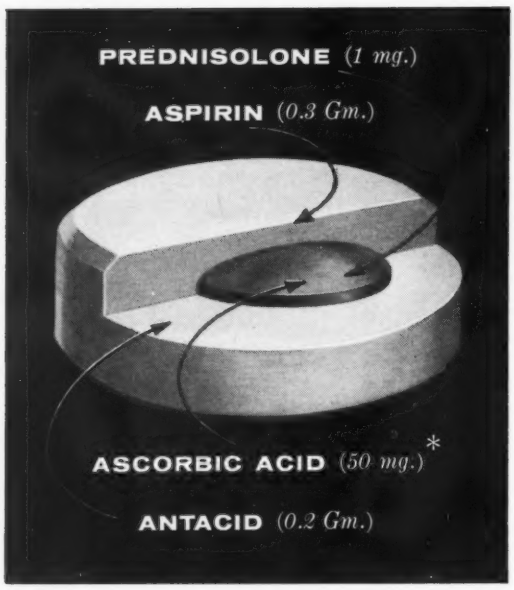

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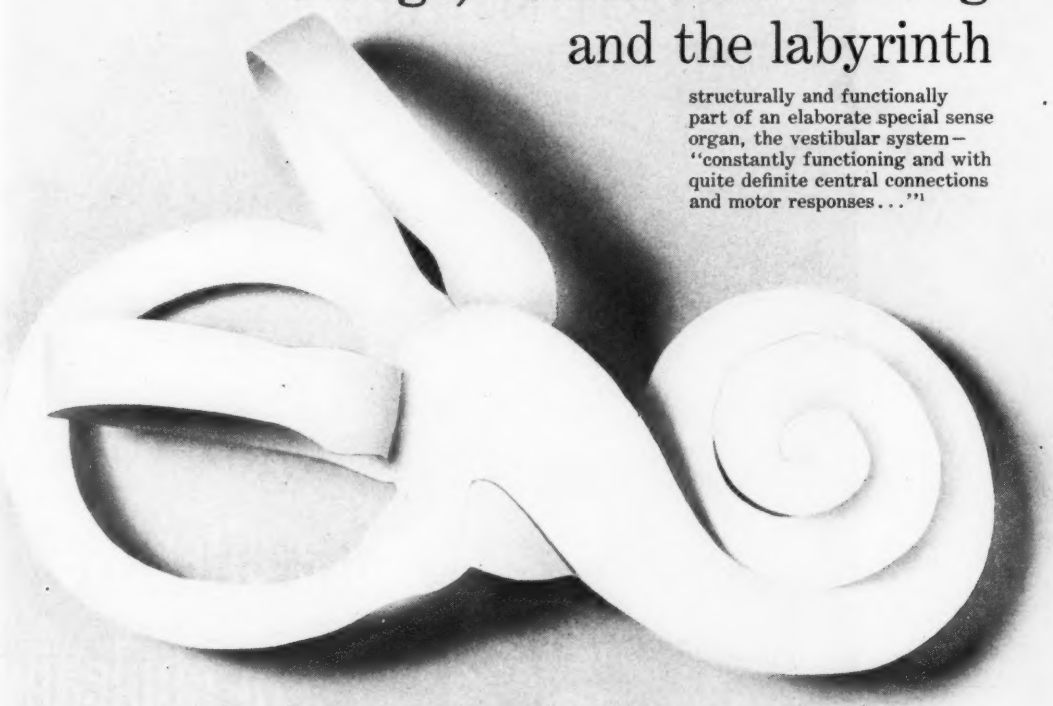
vertigo, nausea and vomiting and the labyrinth



structurally and functionally part of an elaborate special sense organ, the vestibular system—"constantly functioning and with quite definite central connections and motor responses..."[1]

controlled by

BONAMINE*

BRAND OF MECLIZINE HYDROCHLORIDE

—effectively blocking responsible physiological pathways to provide immediate and long-lasting relief from vertigo, nausea and vomiting associated with

the postoperative state—"Bonamine is a suppressor of postoperative nausea and vomiting, and has a potential use in contributing to the comfort and clinical well-being of patients recovering from surgery requiring general anaesthesia."[2]

cerebral arteriosclerosis—Bonamine "provided effective protection against attacks of vertigo" in 93.6% of the patients with this complaint. "The lack of adverse effects... suggests that long-term use of this drug to provide continuous protection against attacks of vertigo is a reasonable procedure in the management of such patients."[3]

motion sickness—In a comparative study involving many thousands of subjects, Bonamine was the only motion-sickness preventive effective in a single daily dose. The duration of action with Bonamine "is clearly longer than that of the other drugs tested."[4] Bonamine is notably safe and free of side effects which might interfere with the patient's normal activities.

Bonamine also controls effectively the dizziness and emesis associated with radiation therapy, Ménière's syndrome, fenestration procedures, labyrinthitis and streptomycin toxicity.

Bonamine is available as scored, tasteless tablets, 25 mg.; also in the form of mint-flavored chewing tablets, 25 mg.

References: 1. Krieg, W. J. S.: Functional Neuroanatomy, Philadelphia, The Blakiston Company, 1947, pp. 111-133. 2. Kinney, J. J.: J. M. Soc. New Jersey *53*:128 (March) 1956. 3. Weil, L. L.: Florida J. Gen. Pract. *4*:9 (July) 1954. 4. Report of Study by Army, Navy, Air Force Motion Sickness Team: J.A.M.A. *160*:755 (March 3) 1956.

*Trademark

PFIZER LABORATORIES, *Division, Chas. Pfizer & Co., Inc.*, Brooklyn 6, N. Y. Pfizer

ANNOUNCING

'CATH O

more effective
in clinically
important infections
than any other
antibiotic

FOR MOST INFECTIONS

CILLIN

NEW

(NOVOBIOCIN-PENICILLIN G, MERCK)

THE ANTIBIOTIC PRODUCT MOST LIKELY TO BE EFFECTIVE

COMPARE THESE ADVANTAGES:

1. Proved effectiveness in the largest number of clinically important infections including those caused by antibiotic-resistant *staphylococci* and proteus.
2. Therapeutic, *bactericidal* blood levels are promptly achieved.
3. Exceptionally well tolerated; patient sensitivity reactions are rare at recommended dosage.
4. No yeast or fungal super-infections nor any antibiotic-induced enteritis, vaginitis or proctitis have been reported following CATHOCILLIN.
5. No problems of cross-resistance have been encountered with CATHOCILLIN.
6. The normal intestinal flora is not disturbed by CATHOCILLIN.

DOSAGE: *for adults—two capsules q.i.d.; for children under 100 lbs.—dosage in proportion to weight (e.g. one capsule q.i.d. for a child weighing 50 lbs.).*

CONSIDER CATHOCILLIN FIRST

—for these clinically important infections: tonsillitis; pharyngitis; pneumonia; otitis media; cervical lymphadenitis; streptococcal sore throat; infected tooth sockets; Vincent's infection; acne and superficial skin infections; impetigo; boils, furuncles and carbuncles; lung abscess; bronchitis; mastitis; osteomyelitis; wound infections; postoperative wound infections and infected lacerations; staphylococcal enteritis, staphylococcal diarrhea of the newborn; peritonitis (caused by susceptible organisms); pelvic inflammatory disease; gonorrhea; gonococcal arthritis; urethritis; scarlet fever; erysipelas.

SUPPLIED: *Blue and white capsules of* 'CATHOCILLIN' *—each containing 125 mg. of* 'CATHOMYCIN' *(as Sodium Novobiocin, Merck) and 75 mg. (125,000 units) Potassium Penicillin G; bottles of 16.*

In one prescription the one antibiotic product most likely to be effective

MSD MERCK SHARP & DOHME
DIVISION OF MERCK & CO., INC., PHILADELPHIA 1, PA.

Why the

nhaler is a preferred means of nasal medication

—A.M.A. Arch. Otolaryng. *39*:109.

The active ingredient in 'Benzedrex' Inhaler is propylhexedrine, a compound developed by S.K.F. specifically to provide rapid, complete and prolonged decongestion.

The Inhaler's vasoconstrictive vapor diffuses evenly *throughout* the nasal cavity, opening ostia and ducts which are frequently inaccessible to other intranasal preparations. Drainage is established; congestion relieved; headache, pressure pain and "stuffiness" alleviated.

Wide margin of safety . . . effectiveness . . . convenience . . . ease of application . . . all these adapt 'Benzedrex' Inhaler for use by both children and adults, particularly between office treatments. As Byrne points out, "the ease of the administration of the drug recommends itself to the ambulatory patient and tends to make more certain the patient's use of the material."

—New England J. Med. *209*:1048.

For your patients' comfort between visits to your office

Benzedrex* Inhaler

formula

Each 'Benzedrex' Inhaler is packed with propylhexedrine, S.K.F., 250 mg.; and aromatics.

Smith, Kline & French Laboratories, Philadelphia

*T.M. Reg. U.S. Pat. Off.

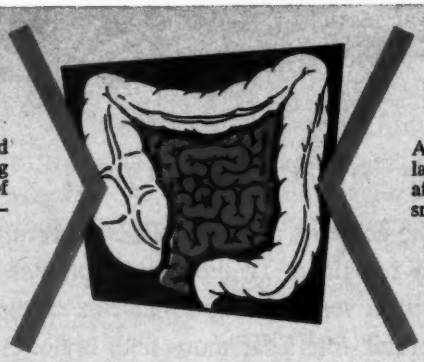
Now! liquid, too

ideal for your pediatric, geriatric, convalescent patients

MODANE

a nutritive deconstipant

which not only relieves but also rehabilitates



Improves peristalsis and bowel movement, suggesting a selective stimulation of the intrinsic nerve plexus—not irritation.

Acts as a laxative on the large bowel only—does not affect motor activity of the small bowel.

Actually, a *therapeutic* approach . . . relief plus repair for the atonic bowel.

Acts surely, gently, overnight — without griping. Non-toxic, non-habit-forming.

Provides Pantothenic Acid — proven indispensable to acetyl-choline formation and normal bowel function.

Each tablet of MODANE REGULAR contains Danthron 75 mg. and Calcium Pantothenate 25 mg., Danthron to encourage peristalsis, Calcium Pantothenate for rehabilitation of the atonic bowel.

Dosage . . . MODANE REGULAR — one tablet after the evening meal. MODANE MILD (half strength, for hypersensitive, pregnant, pediatric and diet-restricted patients) — one pink tablet after the evening meal. MODANE LIQUID (one teaspoonful equals one Modane Mild tablet) — fractional or full teaspoonful, after the evening meal.

THE WARREN-TEED PRODUCTS COMPANY
COLUMBUS 8, OHIO

WARREN-TEED *Pharmaceuticals*

more than hope...

When the contents of Pandora's Box were released,
Hope alone remained. To the allergic patient,
faced with a veritable Pandora's Box of discomforts,
'Perazil' offers far more than hope. It gives
ability to withstand allergens, without reactions.

'PERAZIL'®

brand Chlorcyclizine Hydrochloride

long-lasting action • exceptionally little side effect

For children and adults: SUGAR-COATED TABLETS OF 25 mg.
SCORED (UNCOATED) TABLETS OF 50 mg.

BURROUGHS WELLCOME & CO. (U.S.A.) INC., *Tuckahoe, New York*

new triple-action evacuant

softens the stool swells the stool and stimulates peristalsis

DORBANTYL*

unique, new DORBANTYL combines Dioctyl Sodium Sulfosuccinate—the wetting agent that helps form a normal, easily-passed stool,[1,2,3] and

DORBANE—widely prescribed, dependable peristaltic stimulant[4]

unique, new DORBANTYL is both effective and well tolerated—"...a superior evacuant which retains the advantages of both component drugs without the disadvantages of either used alone."[1]

unique, new DORBANTYL is clinically described as a "preparation of choice" in anorectal and colonic surgery, as well as in functional constipation and cathartic habituation.[1]

dosage: Adults, 2 capsules at bedtime; repeat if needed to cause bowel movement. If necessary, dosage may be increased or decreased to meet individual requirements. Children, 3 to 12 years, 1 or 2 capsules taken as above.

supplied: Bottles of 30 capsules and 250 capsules. Each capsule contains 50 mg. Dioctyl Sodium Sulfosuccinate and 25 mg. DORBANE.

references: (1) Marks, M. M.: In press. (2) Antos, R. J.: Southwestern Med. *37*:236, 1956. (3) Wilson, J. L., and Dickinson, D. G.: J.A.M.A. *158*:261 (May 28) 1955. (4) Marks, M. M.: Am. J. Digest. Dis. *20*:240, 1953.

in occasional constipation or for more rapid response prescribe

DORBANE®

peristaltic stimulant selective, persuasive, crystalline-pure

DORBANE scored tablets (75 mg. Danthron) and DORBANE orange-flavored suspension (37.5 mg. per 5-cc. tsp.).

*DORBANTYL IS THE TRADEMARK OF SCHENLEY LABORATORIES, INC., FOR ITS BRAND OF DANTHRON WITH DIOCTYL SODIUM SULFOSUCCINATE.

DORBANE IS THE REGISTERED TRADEMARK OF SCHENLEY LABORATORIES, INC., FOR ITS BRAND OF DANTHRON. 44457

Schenlabs SCHENLEY LABORATORIES, INC · NEW YORK 1, NEW YORK

more effective than one
or two pints of tap water
or salt solution

FLEET® ENEMA

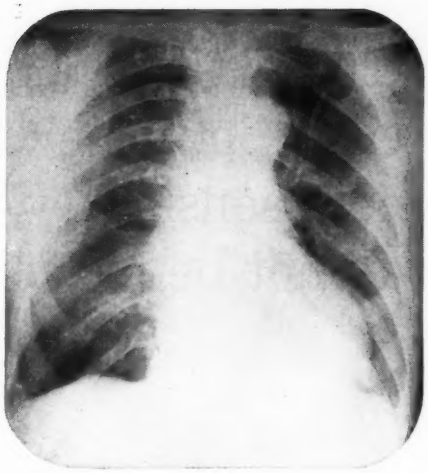
Disposable Unit

"Squeeze bottle" sized for easy one hand administration . . . distinctive rubber diaphragm controls flow, prevents leakage . . . correct length of rectal tube minimizes injury hazard . . . each unit contains, per 100 c.c., 16 gm. sodium biphosphate and 6 gm. sodium phosphate . . . an enema solution of Phospho-Soda (Fleet)...gentle, prompt, thorough . . . and less irritating than soap suds enemas.

Established 1869

C. B. FLEET CO., INC., LYNCHBURG, VIRGINIA

Makers of Phospho®-Soda (Fleet), a modern laxative of choice.



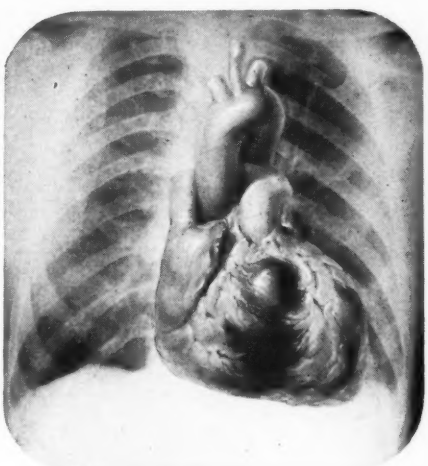
VISUAL HEART CLINIC—ONE OF A SERIES
ARTERIOSCLEROTIC HEART DISEASE

ROENTGEN CONFIGURATION

Postero-anterior position

Moderate left ventricular enlargement with prominence and calcification of aortic knob.

Taken from White Laboratories' Technical Exhibit, American Medical Association, 105th Annual Meeting, Chicago, June 11-15, 1956.



"Safe and effective maintenance therapy with digitalis glycosides had been a problem at our institution until we used gitalin [GITALIGIN]..."*

- *Safest—the only cardioactive glycoside whose therapeutic dose is ⅓ its toxic dose.*
- *Moderate rate of elimination.*
- *Short latent period.*
- *Uniform clinical potency.*

Patients now on other cardiotonics may be easily maintained on Gitaligin: 0.5 mg. of Gitaligin is approximately equivalent to 0.1 Gm. digitalis leaf, 0.1 mg. digitoxin, 0.5 mg. digoxin.

GITALIGIN TABLETS—Bottles of 30, 100 and 1000.

GITALIGIN DROPS—30 cc. bottles with dropper calibrated for 0.05, 0.1, 0.2, 0.3, 0.4 and 0.5 mg.

now available

GITALIGIN INJECTION—5 cc. ampuls containing 2.5 mg. (0.5 mg. per cc.) of Gitaligin. Packages of 3 and 12 ampuls.

*HARRIS, R., AND DEL GIACCO R. R.: AM HEART J. (AUG.) 1956. BIBLIOGRAPHY ON REQUEST

White's

GITALIGIN®

(WHITE'S BRAND OF AMORPHOUS GITALIN)

White Laboratories, Inc. • Kenilworth, New Jersey

added certainty in antibiotic therapy –particularly for that 90% of the patient population treated in home or office where sensitivity testing may not be practical...

for your entire patient population

multi-spectrum

Sigmam

100% EFFECTIVE in respiratory infections including the 25% due to resistant staphylococci.[1-3]

97% EFFECTIVE in dermatologic and mixed soft tissue infections including the 22% resistant to one or more antibiotics.[3-6]

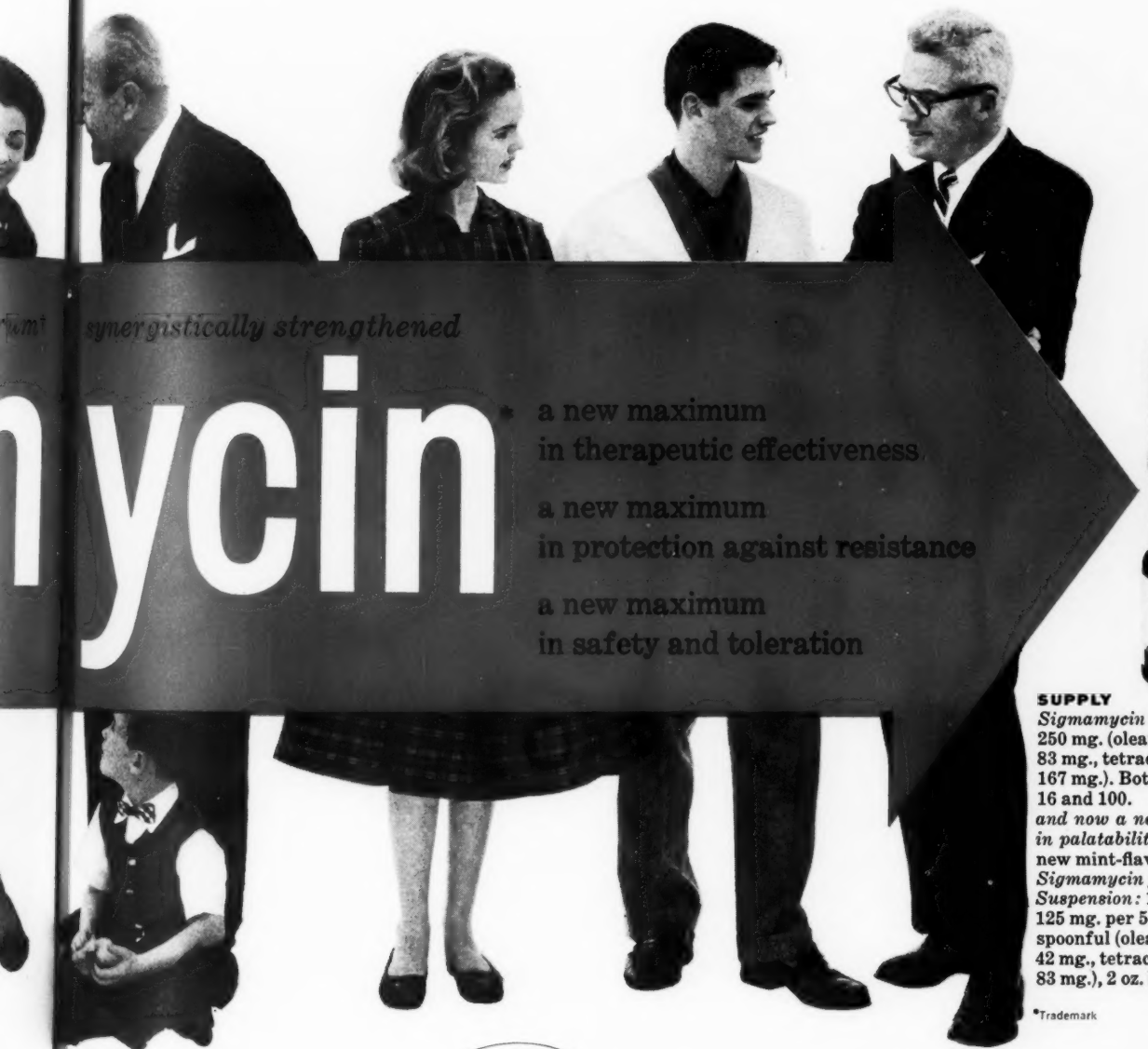
84.6% EFFECTIVE in genitourinary infections including the 61% resistant to other antibiotic therapy.[2,5]

93% EFFECTIVE in diverse infections including the 21% due to resistant pathogens.[1,5]

98.7% EFFECTIVE in tropical infections including those complicated by heavy bacterial contamination or multiple parasitisms.[7]

1. Carter, C. H., and Maley, M. C.: Antibiotics Annual 1956-1957, New York, Medical Encyclopedia, Inc., 1957, p. 51. 2. Shalowitz, M., and Sarnoff, H. S.: Personal communication. 3. Shubin, M.: Personal communication. 4. La Caille, R. A., and Prigot, A.: Antibiotics Annual 1956-1957, New York, Medical Encyclopedia, Inc., 1957, p. 67. 5. Winton, S. S., and Cheserow, E.: Antibiotics Annual 1956-1957, New York, Medical Encyclopedia, Inc., 1957, p. 55. 6. Cornbleet, T.: Personal communication. 7. Loughlin, E. H.; Mullin, W. G.; Alcinder, L., and Joseph, A. A.: Antibiotics Annual 1956-1957, New York, Medical Encyclopedia, Inc., 1957, p. 63.

†the antimicrobial spectrum of tetracycline extended and potentiated with oleandomycin (Matromycin®) to combat resistant strains of pathogens—particularly resistant staphylococci—and to delay or prevent the emergence of new antibiotic-resistant strains.



SUPPLY
Sigmamycin Capsules: 250 mg. (oleandomycin 83 mg., tetracycline 167 mg.). Bottles of 16 and 100.
and now a new maximum in palatability with new mint-flavored *Sigmamycin for Oral Suspension:* 1.5 Gm., 125 mg. per 5 cc. teaspoonful (oleandomycin 42 mg., tetracycline 83 mg.), 2 oz. bottle.

*Trademark

Pfizer

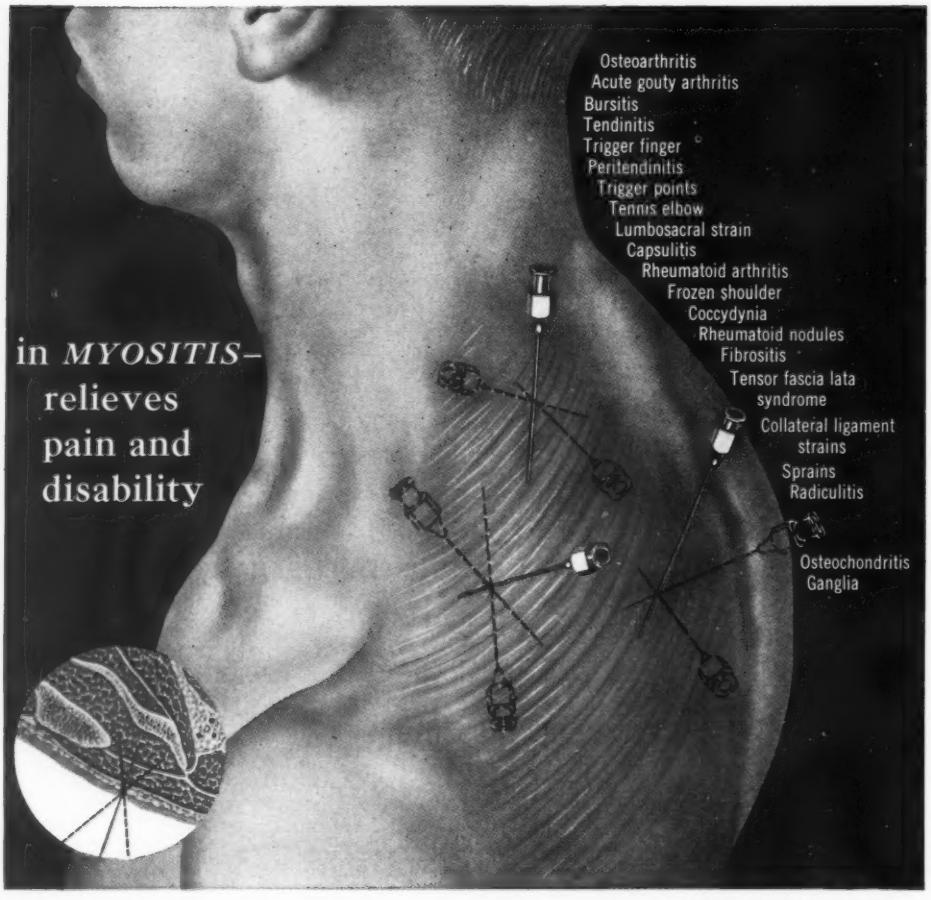
PFIZER LABORATORIES, *Division, Chas. Pfizer & Co., Inc.*, Brooklyn 6, N.Y.
World leader in antibiotic development and production

NEW

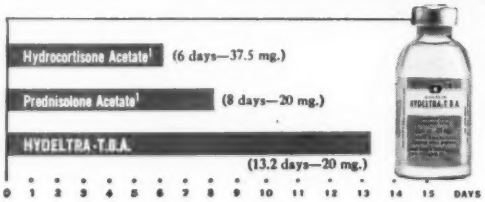
HYDELTRA®-T.B.A.

(Prednisolone *tertiary*-butylacetate, Merck)

for relief that lasts—longer



Anti-inflammatory effect lasts longer than that provided by any other steroid ester


Hydrocortisone Acetate[1] (6 days—37.5 mg.)
Prednisolone Acetate[1] (8 days—20 mg.)
HYDELTRA-T.B.A. (13.2 days—20 mg.)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 DAYS

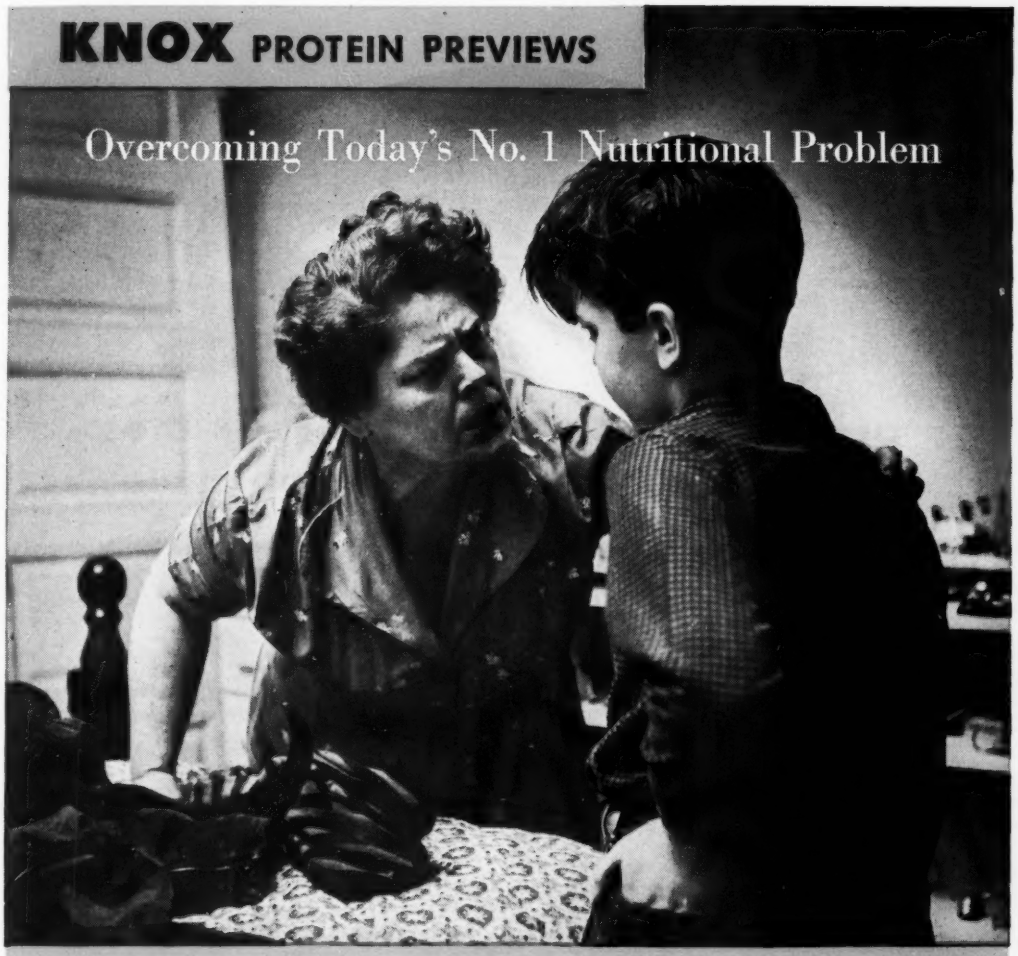
Dosage: the usual intra-articular, intra-bursal or soft tissue dose ranges from 20 to 30 mg. depending on location and extent of pathology.

Supplied: Suspension 'HYDELTRA'-T.B.A.—20 mg./cc. of prednisolone *tertiary*-butylacetate, in 5-cc. vials.

MERCK SHARP & DOHME
DIVISION OF MERCK & CO., INC.
PHILADELPHIA 1, PA.

1. Hollander, J. L., *Paper read at conference in New York City, May 31 and June 1, 1955*

KNOX PROTEIN PREVIEWS



Knox "Choice of Foods" Diet Can Help Your HYPERTENSIVE Patients to Reduce and Stay Reduced

1. Color coded diets of 1200, 1600 and 1800 calories are based on nutritionally tested Food Exchanges.[1]

2. The easy-to-use Food Exchanges (called Choices in booklet) simplify diet management by eliminating calorie counting.

3. Diets promote accurate adjustment of caloric levels to the special needs of the patient yet allow each individual considerable latitude in the choice of foods.

4. More than six dozen appetizing, low-calorie recipes are described in the last fourteen pages of the diet booklet.

1. The Food Exchange Lists referred to are based on material in "Meal Planning with Exchange Lists" prepared by Committees of the American Diabetes Association, Inc., and The American Dietetic Association in cooperation with the Chronic Disease Program, Public Health Service, Department of Health, Education and Welfare.

Chas. B. Knox Gelatine Co., Inc.
Professional Service Dept. JO-27
Johnstown, N. Y.

Please send me ..... dozen copies of the new, illustrated Knox Reducing booklet based on Food Exchanges.

Your Name and Address.

prescribe RAUDIXIN to break the mental tension—hypertension cycle

*Raudixin reduces mental tension

Tranquilizing Raudixin reduces the mental tension which plays a significant role in hypertension . . . reduces mental tension as yet unrelated to physical symptoms.

*Raudixin reduces hypertension

Blood pressure lowering effect is gradual, sustained in hypertensives . . . little or no hypotensive effect is produced in normotensives.

*Single daily dosage

Discourages promiscuous over-use by patients . . . not habit-forming.

RAUDIXIN

Squibb Whole Root Rauwolfia Serpentina

SQUIBB *Squibb Quality—the Priceless Ingredient*

*"RAUDIXIN"® IS A SQUIBB TRADEMARK

Romilar

'Roche'

relieves cough—

...specifically,
by direct suppression
of the cough reflex.
But unlike narcotics,
Romilar does not cause
central depression,
drowsiness, constipation,
or other side effects.
Available as syrup,
tablets, and expectorant
(c NH_4Cl).

Romilar® HBr – brand of dextromethorphan HBr

in a single tablet —

pain relief

plus

antibacterial action

AZO GANTRISIN

In urinary tract infections, Azo Gantrisin usually provides effective antibacterial control (local and systemic), together with prompt relief of associated pain and discomfort . . . by combining well-tolerated Gantrisin with a clinically proved urinary analgesic.

ROCHE

Each Azo Gantrisin tablet contains 0.5 Gm Gantrisin 'Roche' plus 50 mg phenylazo-diamino-pyridine HCl.

Gantrisin® - brand of sulfisoxazole

for a tiny tarzan...

comprehensive protection

Deca-Vi-Sol®

the dropper-dose member of the Mead Johnson
DECA vitamin family

10 nutritionally significant vitamins • delicious fruit flavor no unpleasant aftertaste • assured stability including B_{12} • full dosage assured—can be dropped directly into baby's mouth • no refrigeration required • in 15 cc., 30 cc. and economical 50 cc. bottles with calibrated, unbreakable plastic 'Safti-Dropper'

it's easy to specify the DECA vitamin family
in the vital first decade

DECA-VI-SOL® • DECA-MULCIN® • DECA-VI-CAPS®

one name to remember—Deca • one basic formulation
one standard of comprehensive protection

MEAD JOHNSON

SYMBOL OF SERVICE IN MEDICINE

12957

NEW! More Effective...

Medihaler-Phen™

Each cc. provides phenylephrine HCl 3.6 mg., neomycin sulfate 1.5 mg. (equivalent to 1 mg. of neomycin base), and hydrocortisone 0.6 mg., in 10 cc. leakproof, spillproof vials with metered-dose valve and sterilizable unbreakable plastic nasal adapter.

Unvarying Measured-Dose Nasal Medication Reaching the Entire Paranasal Mucosa

VASOCONSTRICTIVE Counteracts hyperemia of nasal and paranasal mucosa

DECONGESTIVE Diminishes edema and hypersecretion . . . opens sinus ostia

ANTI-INFLAMMATORY Neutralizes the exudative phase of tissue reaction

ANTIBIOTIC Attacks bacterial invasion directly

Medihaler-Phen™ . . . an ethical prescription item . . .

makes squeeze bottle and dropper medications obsolete

Medihaler-Phen is self-powered, measured-dose vaporized medication providing effective relief for congested nasal and paranasal mucosa.

Its active ingredients—phenylephrine HCl, hydrocortisone, and neomycin sulfate—are in wide clinical use. In Medihaler-Phen, for the first time, they are blended with an inert, nontoxic aerosol propellent, and are made more effective with a penetrating surfactant. An accurately-measured nebular cloud is gently ejected, regardless of how the Medihaler-Phen valve is compressed—not part spray, part stream as with spray bottles—not an irritating, powerful jet—no drops of liquid which tend to run out of the nasal passages.

Because of the extremely small, uniform particle size of Medihaler-Phen nebulization, less medication is required to decongest the mucosa and open the ostia of paranasal sinuses.

Longer Lasting Relief in Nasal Congestion

RHINITIS
SINUSITIS
PHARYNGITIS

due to upper respiratory infections and allergies

tissue compatible
greater effectiveness
longer lasting
no rebound
vest pocket size

Medihaler-Phen™ is Safe

...FOR CHILDREN, TOO

Repeated use does not result in tachyphylaxis. . . . Does not possess the cardiac and nervous system-stimulating actions characteristic of other topical vasoconstrictors. . . . Even gross overdosage does not lead to drowsiness or deep somnolence in children. . . . Concentration of hydrocortisone effective locally, but produces no systemic effect. . . . Penetrates "mucous blanket" of nasal mucosa without irritation.

OTHER USES Medihaler-Phen is also valuable in the symptomatic treatment of "postnasal drip" due to excessive smoking, air pollution, steam heating, etc.

ANOTHER Riker FIRST

in

treatment of

MENSTRUAL IRREGULARITIES

let Duosterone® anhydrohydroxyprogesterone 10.00 mg. / primed by ethinyl estradiol 0.01 mg. } per tablet

"do as the ovaries do..."

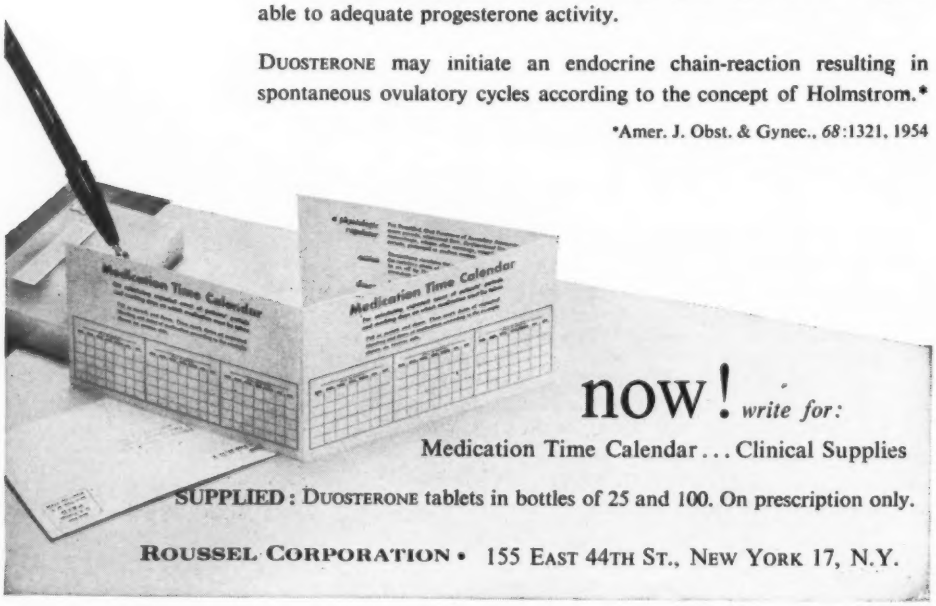
A PHYSIOLOGIC REGULATOR: For *Simplified, Oral Treatment* of *Secondary Amenorrhea:* infrequent periods, subnormal flow, *Dysfunctional Uterine Bleeding:* menorrhagia, relapse after curettage, irregular or too frequent periods, prolonged or profuse menses.

OTHER INDICATIONS: Habitual abortion, functional sterility and dysmenorrhea have responded to DUOSTERONE therapy.

ACTION: DUOSTERONE simulates the normal ovarian endocrine pattern of the secretory phase of the menstrual cycle. A normal cycle may be set off by DUOSTERONE, much as touching the pendulum starts a wound clock. Normal menstrual function is *safely* and conveniently restored with essential, two-hormone action provided by DUOSTERONE: (1) Administration of needed progesterone, and (2) Estrogen priming, which is indispensable to adequate progesterone activity.

DUOSTERONE may initiate an endocrine chain-reaction resulting in spontaneous ovulatory cycles according to the concept of Holmstrom.*

*Amer. J. Obst. & Gynec., *68*:1321, 1954



now! *write for:*

Medication Time Calendar... Clinical Supplies

SUPPLIED: DUOSTERONE tablets in bottles of 25 and 100. On prescription only.

ROUSSEL CORPORATION • 155 EAST 44TH ST., NEW YORK 17, N.Y.

The Lungs are the Logical Portal of Entry for Fastest Relief in ANGINA PECTORIS

Only a Single-Cell Barrier to Cross

Medihaler-Nitro

Medihaler . . . the Unique Measured-Dose Inhalation Principle

Inhalation Therapy . . .
A Logical Approach

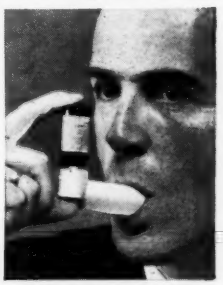
The most direct portal of entry—the respiratory tract—assures faster relief than by the sublingual route because medication has to cross only the single-cell alveolar lining. . . . Relief of anginal pain occurs in 10 to 30 seconds.

Medihaler-Nitro . . .
A Dependable Coronary Vasodilator

Virtually free from side actions. . . . No irritating odor. . . . Longer-lasting vasodilating effect. . . . Each measured dose of Medihaler-Nitro delivers 0.25 mg. of octyl nitrite, equivalent to 1/100 gr. nitroglycerin. . . . Extensive testing shows outstanding effectiveness and patient-acceptance of this revolutionary approach.

The Medihaler® Method

This unique measured-dose inhalation method of drug administration makes possible exact dosage with nebulized medications. . . . Each bottle provides 200 inhalations. . . . Oral Adapter and 10 cc. bottle of medication fit into convenient pocket-sized plastic case.



Note: First prescription must include medication and Medihaler Oral Adapter (supplied with plastic case for medication and Adapter).

The Medihaler® principle

is also available in Medihaler-Epi® (epinephrine) and Medihaler-Iso® (isoproterenol) for rapid relief of asthmatic attacks . . . and Medihaler-Phen™ (phenylephrine-hydrocortisone-neomycin) for lasting, effective relief of nasal congestion.

Riker LOS ANGELES

Erythromycin in Treating Pneumonia

A 27-year-old man, a chronic alcoholic, was admitted with a history of an alcoholic spree followed by a cough, greenish sputum and chills and fever.

Physical examination showed a temperature of 104 F. and indicated pneumonia in the right lower lobe. This was confirmed by X-ray. The sputum revealed gram-positive diplococci and blood culture subsequently grew Type VII pneumococci.

The patient was treated with erythromycin, 300 mg. every six hours per os. His temperature dropped to normal by 48 hours and X-ray of the chest revealed considerable clearing by the fourth hospital day. After 10 days hospitalization, the patient was fit for discharge.[1]

First Antibiotics Symposium, we reported the successful treatment with hromycin of *H. influenzae* pneumonia and bacteremia. A second patient with *H. influenzae* pneumonia and bacteremia had a clinical course almost identical to the one previously reported, with cure obtained by treatment with 500 mg. of erythromycin per os every four hours for 14 days.

Of these 132 patients with bacterial pneumonia, 127 (96%) had a good clinical result. One patient with lobar pneumonia had a good initial
delayed resolution of

"Highly Effective in Pneumonia"

In one investigation, 75 adult patients with bacterial pneumonia were treated with erythromycin. In his summary, the clinician reported: "It is concluded that erythromycin is highly effective in the treatment of pneumonia due to gram-positive bacteria."[2]

This, of course, is only one of many reports showing the effectiveness of ERYTHROCIN against coccic infections. You'll get the same good results (nearly 100% in common, bacterial respiratory infections) when you prescribe ERYTHROCIN. Abbott

filmtab®

Erythrocin®

(Erythromycin, Abbott)

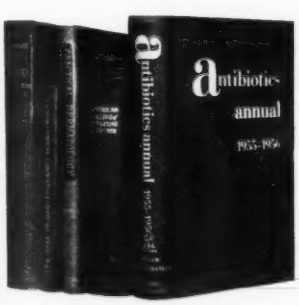
STEARATE

"No Serious Side Effects Occurred"

After a study of 171 patients treated with erythromycin, the investigator wrote: "No serious side effects occurred with prolonged therapy or with doses up to 8 Gm. per day in the severe infections."[1]

Actually, ERYTHROCIN stands on a remarkable record of safety. After four years, there's not a single report of a severe or fatal reaction attributable to erythromycin. In addition, you'll find allergic manifestations rarely occur. *Filmtab* ERYTHROCIN Stearate (100 and 250 mg.), in bottles of 25 and 100. Abbott

® Filmtab—Film-Sealed tablets, Abbott; pat. applied for.



1. Romansky, M.J., et al., Antibiotics Annual 1955-1956, p. 48,
2. Waddington, W. S., Maple, F. C., and Kirby, W. M. M., A.M.A. Archives of Internal Medicine, 1954, p. 556.

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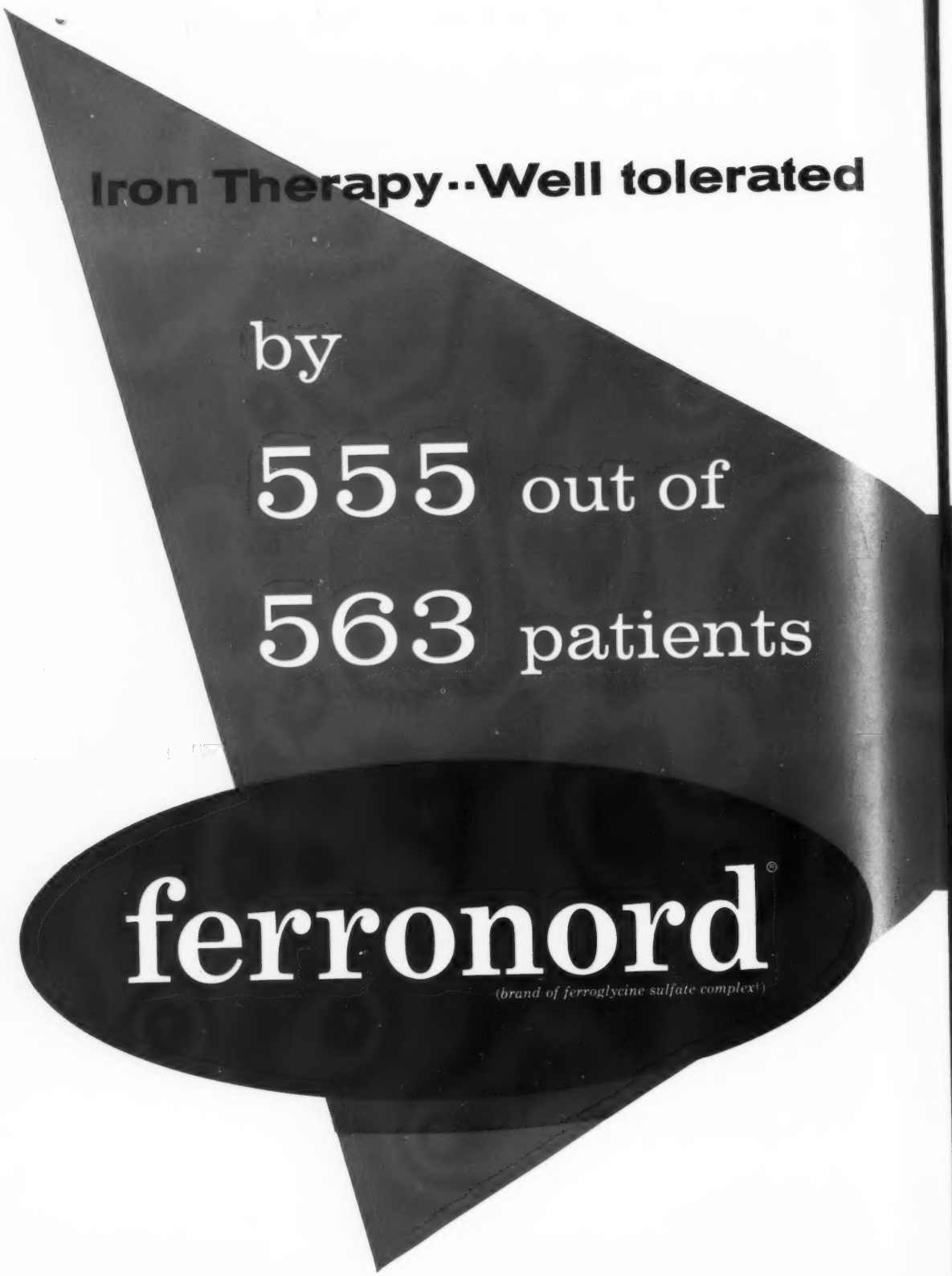

Iron Therapy--Well tolerated
by
555 out of
563 patients
ferronord®
(brand of ferroglycine sulfate complex†)

"555 (98½%) patients tolerated this ferrous sulfate-amino acid complex (FERRONORD) without complaint."[1]

"Extraordinarily well tolerated" in 120 obstetrical and gynecological patients.[2]

Well tolerated even in patients with peptic ulcer and gastritis.[3]

- **serum response in 3 hours**
- **clinical response in days**
- **between-meal administration for better utilization**

FERRONORD Dosage:

average adult dosage: Initially, 2 tablets twice a day; in severe cases, 2 tablets 3 times daily. Maintenance, 1 to 2 tablets daily.

children's dosage: In proportion.

FERRONORD Supplied:

Bottles of 100 tablets. Each tablet supplies 40 mg. of ferrous iron.

1. Frohman, I. P.; Pomeranze, J.; Rummel, W.; Kircher, R. F.; Clancy, J. B.; Dwyer, T. A.; Wagner, H.; O'Brien, T. E.; Curley, R. T.; Jörgensen, G.; Onorato, R. R.; Ira, F.; Lee, Jr., J. G.; Gorla, W. O.; White, R. N.; Gadek, R. J.; Remy, D.: Scientific Exhibit, 6th International Congress of Hematology, Boston, Mass., August, 1956.
2. Wagner. H.: Landarzt *31*:496, 1955.
3. Jörgensen, G.: Arztl. Wchnschr. *10*:82, 1955.

†α-aminoacetic-ferrous sulfate complex, exsiccated

NORDMARK PHARMACEUTICAL LABORATORIES, INC., IRVINGTON, N. J.

Suppliers of fine chemicals to the pharmaceutical industry for more than a quarter of a century.

. . . part of *every illness*

ANXIETY

is part of

GASTROINTESTINAL DISORDERS

EQUANIL

MEPROBAMATE

(2-methyl-2-n-propyl-1,3-propanediol dicarbamate)
Licensed under U.S. Patent No. 2,724,720

"... every variety of personality... may have psychosomatic disturbance of the gastrointestinal tract.... We are persuaded from our own studies that emotional factors are the chief *cause of gastrointestinal complaints...."*[1]

The gastrointestinal tract is often a sounding-board for the emotions. In many of its disorders, from dyspepsia to colitis, anxiety and tension are frequently both causative and aggravative. EQUANIL is effective as a part of total management because of its specific action against this complicating emotional stress. It allays anxiety, lessens muscular tension, and promotes restful sleep.[2]

In every patient . . . a valuable adjunct to the customary therapy

Supplied: Tablets, 400 mg., bottles of 50.

Usual Dose: 1 tablet, t.i.d.

1. Weiss, E., and English, O.S.: Psychosomatic Medicine. W. B. Saunders Co., Philadelphia, 1949, pp. 358-359.
2. Lemere, F.: Northwest Med. *54*:1098 (Oct.) 1955.

*Trademark

anti-anxiety factor with muscle-relaxing action

Wyeth®
Philadelphia 1, Pa.

On the Protein Quality of the Oatmeal Serving

It has long been known by nutritionists (and probably some laymen) that the standard serving of oatmeal and milk supplies 9 grams of readily available protein. Perhaps less well known is the biologically excellent *quality* of the protein content of the oatmeal breakfast dish.

Quantitatively, rolled oats has a higher average protein content than any other whole grain cereal.[1] Nutritionally, the quality of the protein is reflected in the contained amounts of essential amino acids. Chemical analyses of cereal proteins reveal oats to be relatively rich in essential amino acids. Confirmatory biological evidence for this is apparent from comparative studies of protein quality of various breakfast cereals.[2]

Feeding tests with small animals and human subjects indicate the amino acids of rolled oats to be readily available for absorption and utilization because of the high digestibility of oat protein.[3, 4, 5] The high nutritional value of the rolled oats-and-milk combination was proved many years ago in human feeding experiments in which the protein value was studied in terms of maintaining nitrogen equilibrium.[6] The excellent quality of the combination of proteins in the standard serving of oatmeal and milk is also evident in results of growth tests with weanling rats.[7]

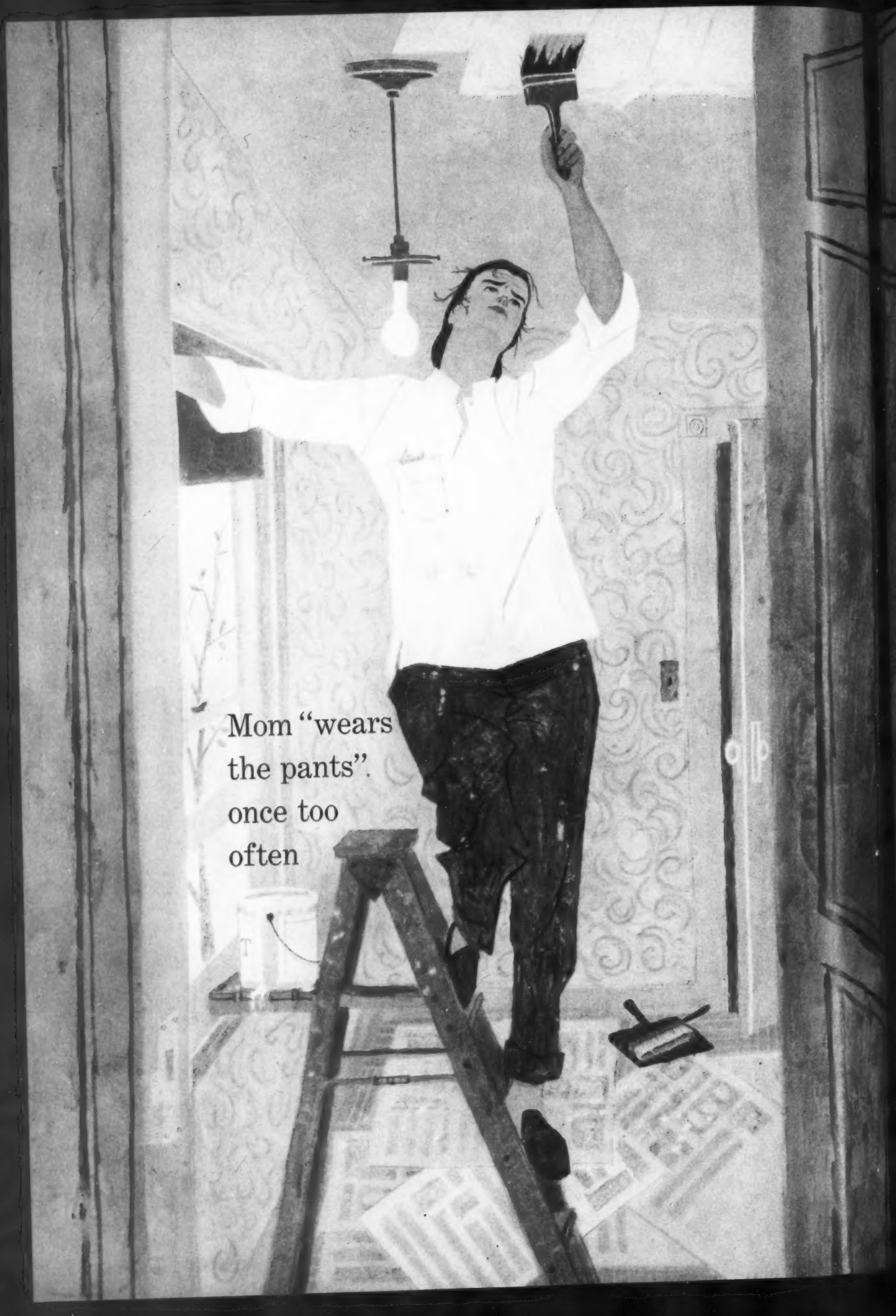
Readily available high-quality protein is important to children for growth promotion and development; it is important to adults for normal maintenance and repair of tissue. The oatmeal-and-milk serving provides such protein, as well as valuable amounts of vitamins and minerals.

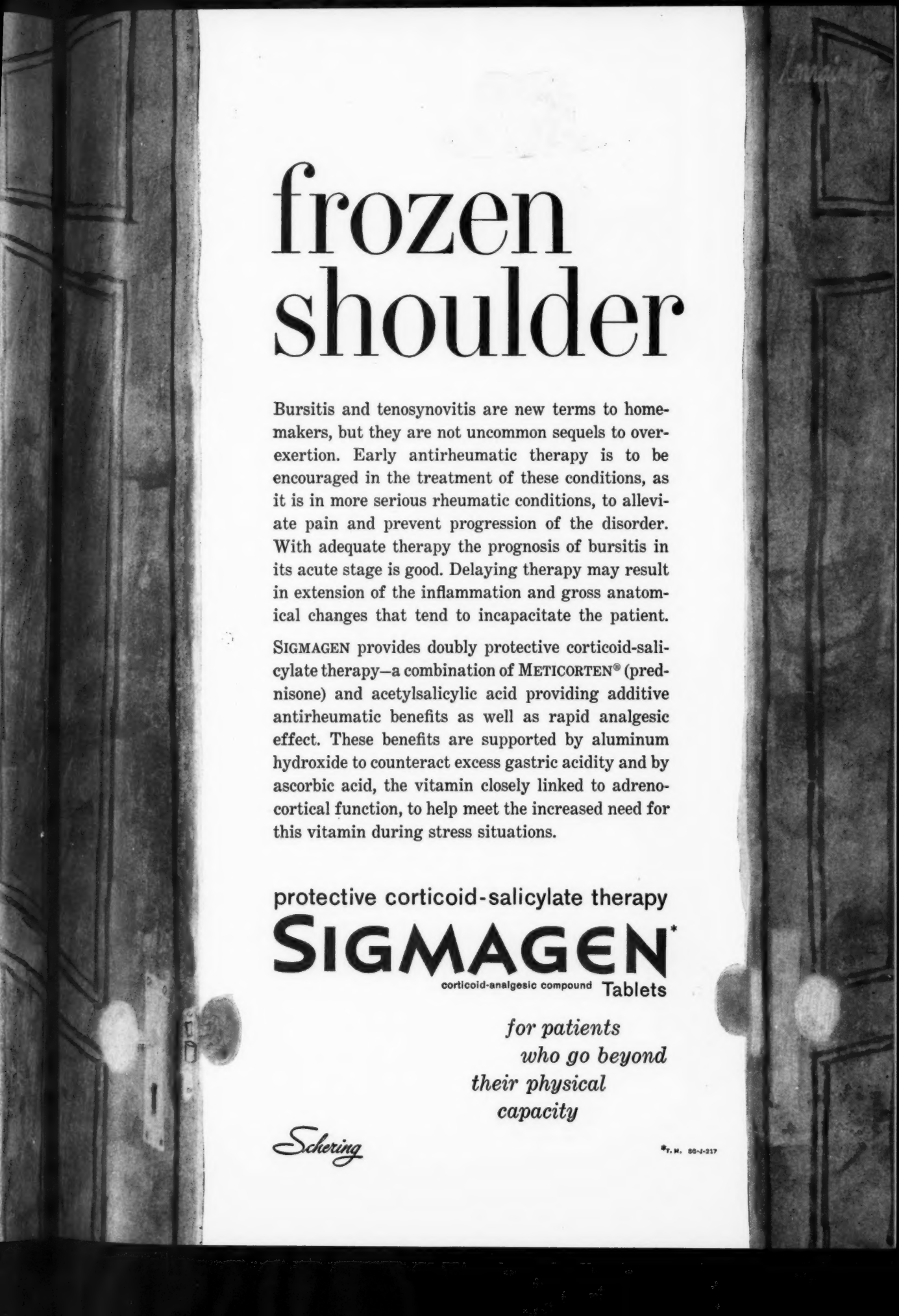
1. Watt, B.K., and Merrill, A.L.: Composition of Foods—Raw, Processed, Prepared, Washington, D.C., United States Department of Agriculture, Agricultural Handbook No. 8, 1950.
2. Sure, B.: Nutritional Values of Proteins in Various Cereal Breakfast Foods, Food Res. *16*:161 (Mar.-Apr.) 1951.
3. Murlin, J.R.; Nasset, E.S., and Marsh, M.E.: The Egg-Replacement Value of the Proteins of Cereal Breakfast Foods, With a Consideration of Heat Injury, J. Nutrition *16*:249 (Sept.) 1938.
4. Mitchell, H.H., and Block, R.J.: Some Relationships Between the Amino Acid Contents of Proteins and Their Nutritive Values for the Growing Rat, J. Biol. Chem. *163*:599 (June) 1946.
5. Clark, L.C.; Ryer, H., and Murlin, J.R.: Relative to Egg Biological Values and Replacement Values of Some Cereal Proteins in Human Subjects, J. Nutrition *38*:405 (Aug.) 1949.
6. Sherman, H.C.; Winters, J.C., and Philips, V.. Efficiency of Oat Protein in Adult Human Nutrition, J. Biol. Chem. *39*.53 (1919).
7. Quaker Oats Company Research Laboratories Project Report.

Quaker Oats and Mother's Oats, the two brands of oatmeal offered by The Quaker Oats Company, are identical. Both brands are available in the Quick (cooks in one minute) and the Old-Fashioned varieties which are of equal nutrient value.

The Quaker Oats Company

CHICAGO


Mom "wears
the pants".
once too
often



frozen shoulder

Bursitis and tenosynovitis are new terms to homemakers, but they are not uncommon sequels to overexertion. Early antirheumatic therapy is to be encouraged in the treatment of these conditions, as it is in more serious rheumatic conditions, to alleviate pain and prevent progression of the disorder. With adequate therapy the prognosis of bursitis in its acute stage is good. Delaying therapy may result in extension of the inflammation and gross anatomical changes that tend to incapacitate the patient.

SIGMAGEN provides doubly protective corticoid-salicylate therapy—a combination of METICORTEN® (prednisone) and acetylsalicylic acid providing additive antirheumatic benefits as well as rapid analgesic effect. These benefits are supported by aluminum hydroxide to counteract excess gastric acidity and by ascorbic acid, the vitamin closely linked to adrenocortical function, to help meet the increased need for this vitamin during stress situations.

protective corticoid-salicylate therapy

SIGMAGEN*

corticoid-analgesic compound **Tablets**

for patients who go beyond their physical capacity

Schering

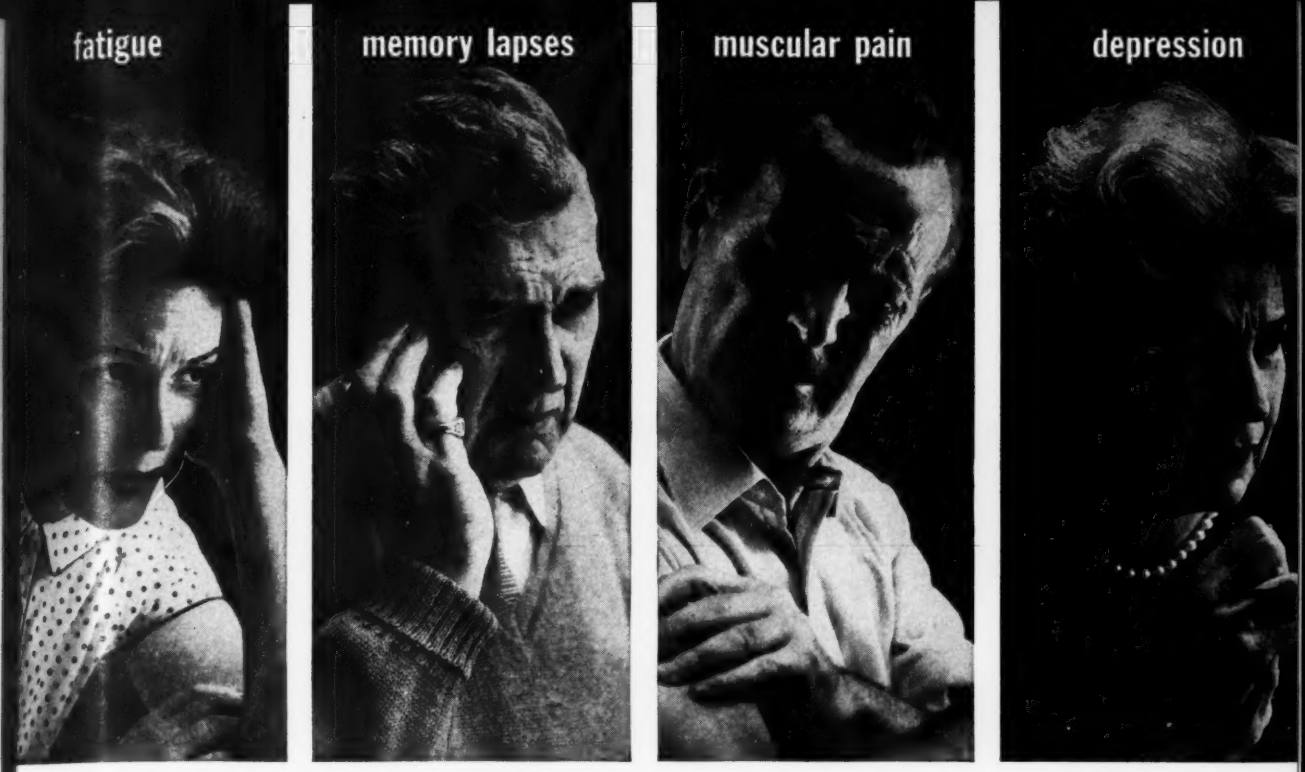
*T. M. 66-J-217

Successful appetite control begins in the supermarket

If your overweight patient can resist the temptation to buy high calorie snacks, he's well on the road to successful weight reduction. You will find that one Dexedrine* Spansule† sustained release capsule taken in the morning controls appetite all day long—both at mealtimes and in the supermarket.

SKF

*T.M. Reg. U.S. Pat. Off. for dextroamphetamine sulfate, S.K.F.
†T.M. Reg. U.S. Pat. Off.



for middle-age slowdown

Plestran is indicated as an aid in restoration of vigor in middle-aged or elderly patients who complain of chronic fatigue . . . reduced vitality . . . low physical reserve . . . impaired work capacity . . . depression . . . muscular aches and pains . . . or cold intolerance. Such "signs of aging," far from being due to physiologic disturbances, may often result from endocrine imbalance, especially gonadal and thyroid dysfunction.[1-4] Plestran provides ethinyl estradiol (0.005 mg.); methyltestosterone (2.5 mg.); and Proloid®* (¼ gr.)—hormones which help to correct endocrine imbalance and often halt or reverse involutional and degenerative changes.[1-4]

Plestran restores work capacity and a sense of well-being, usually within 7 to 10 days. It improves nitrogen balance, leads to better muscle tone and vigor, enhances mental alertness, helps to correct osteoporosis, senile skin and hair texture changes and relieves muscular pain.

The anabolic and tonic effects of the hormones in Plestran appear to be enhanced by combination so that small dosages are very effective. Combination also overcomes some of the disadvantages of therapy with a single sex hormone, such as virilization, feminization or withdrawal bleeding.[5]

Dosage: Usually one tablet daily; occasional patients may require two tablets daily, depending on clinical response.

Supplied in bottles of 100 and 500.

*Purified thyroid globulin

References: 1. McGavack, T. H.: Geriatrics *5*:151 (May-June) 1950. **2.** Masters, W. H.: Obst. & Gynec. *8*:61 (July) 1956. **3.** Kimble, S. T., and Stieglitz, E. J.: Geriatrics *7*:20 (Jan.-Feb.) 1952. **4.** Kountz, W. B., and Chieffi, M.: Geriatrics *2*:344 (Nov.-Dec.) 1947. **5.** Birnberg, C. H., and Kurzrok, R.: J. Am. Geriatrics Soc. *3*:656 (Sept.) 1955.

PLESTRAN TRADEMARK

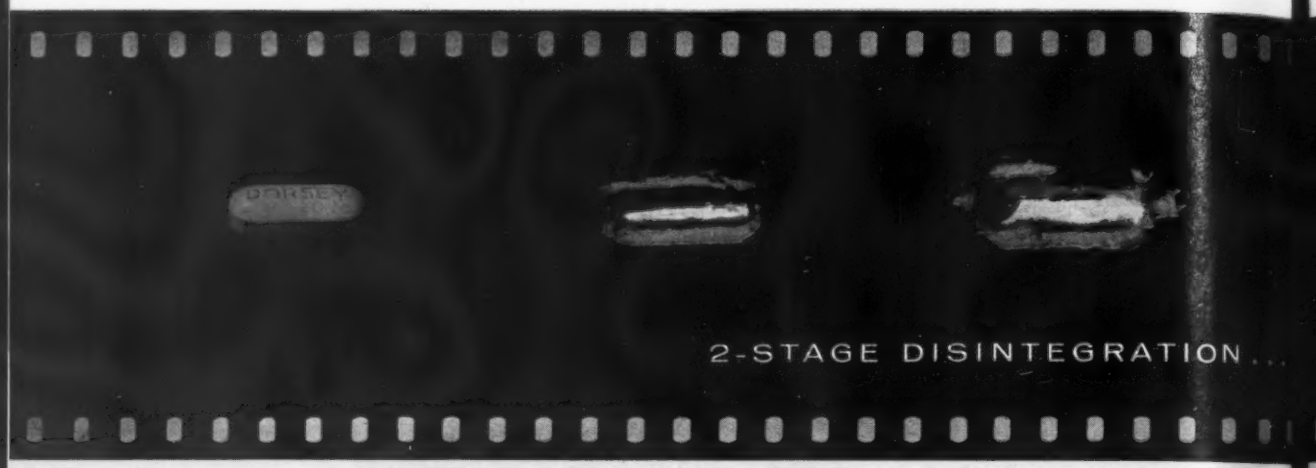
a metabolic regulator

WARNER-CHILCOTT

100 YEARS OF SERVICE TO THE MEDICAL PROFESSION

New...improved salicylate therapy

in a TANDEM RELEASE tablet



The outer layer of Buffered Pabirin Tablets quickly releases aluminum hydroxide for buffering action. PABA to potentiate acetylsalicylic acid and therapeutic doses of ascorbic acid to offset depletion are also in the outer layer.

The inner core of Buffered Pabirin Tablets containing acetylsalicylic acid alone begins to expand after the buffering action has started.

Arthritic patients—the very patients who need salicylate therapy most—are also the ones least able to tolerate salicylates over prolonged periods without gastric distress. This problem is now solved by the new Buffered Pabirin Products. The protective antacid (aluminum hydroxide) buffers against gastric irritation. PABA and the antacid potentiate acetylsalicylic acid and rapidly create high, sustained blood levels with low salicylate dosage...higher than with PABA or buffers alone. Studies show that high salicylate plasma levels promote an increase in production of adrenal cortical hormones.

For resistant rheumatics, Buffered Pabirin AC Tablets provide the added benefits of hydrocortisone. The use of hydrocortisone with acetylsalicylic acid reduces corticoid dosage to minimize the danger of adrenal atrophy. And PABA retards breakdown of hydrocortisone by the liver thereby prolonging its effect.

Buffered Pabirin and Buffered Pabirin AC Tablets are both sodium and potassium free.

SMITH-DORSEY • Lincoln, Nebraska • a division of The Wander Company

☆ buffered for superior gastric tolerance

☆ buffered for faster pain relief

RESULT:

The inner core then disintegrates rapidly and permits fast absorption of the acetylsalicylic acid.

Buffered Pabirin AC Tablets release, in addition, hydrocortisone from the core.

- **increased range of motion**
- **faster pain relief**
- **superior gastric tolerance**

for most rheumatoid arthritics

Buffered Pabirin®

TABLETS

300 mg.	Acetylsalicylic acid (5 gr.)
300 mg.	Para-aminobenzoic acid (5 gr.)
50 mg.	Ascorbic acid
100 mg.	Dried aluminum hydroxide gel

Dosage: Two or three tablets 3 or 4 times daily. In rheumatic fever three to five tablets 4 or 5 times daily.

for resistant rheumatics

Buffered Pabirin®AC

TABLETS

2.5 mg.	Hydrocortisone
300 mg.	Acetylsalicylic acid (5 gr.)
300 mg.	Para-aminobenzoic acid (5 gr.)
50 mg.	Ascorbic acid
100 mg.	Dried aluminum hydroxide gel

Dosage: Initially, one or two tablets 4 times daily, after meals and on retiring. Reduction of dosage should be gradual; never stopped abruptly.

new

a new measure in therapy of overweight

PRELUDIN®

(brand of phenmetrazine hydrochloride)

...reduces risk in reducing

A totally new development in anorexigenic therapy, PRELUDIN substantially reduces the risks and discomfort in reducing.

Distinctive in its Chemistry: PRELUDIN is a totally new compound of the oxazine series.

Distinctive in Effectiveness: In three years of clinical trials PRELUDIN has consistently demonstrated outstanding ability to produce significant and progressive weight loss through voluntary effortless restriction of caloric intake.

Distinctive in Tolerance: With PRELUDIN there is a notable absence of palpitations or nervous excitement. It may generally be administered with safety to patients with diabetes or moderate hypertension.

For your patient's greater comfort: PRELUDIN curtails appetite without destroying enjoyment of meals...causes a mild evenly sustained elevation of mood that keeps the patient in an optimistic and cooperative frame of mind.

Recommended Dosage: One tablet two or three times daily taken one hour before meals. Occasionally smaller dosage suffices.

PRELUDIN® (brand of phenmetrazine hydrochloride). Scored, square, pink tablets of 25 mg.
Under license from C. H. Boehringer Sohn, Ingelheim.

GEIGY PHARMACEUTICALS
Division of Geigy Chemical Corporation • Ardsley, N.Y.

GEIGY

a smile again in just 12 days...

with time-saving **Trīva**

the MODERN *treatment for all 3 types of vaginitis*

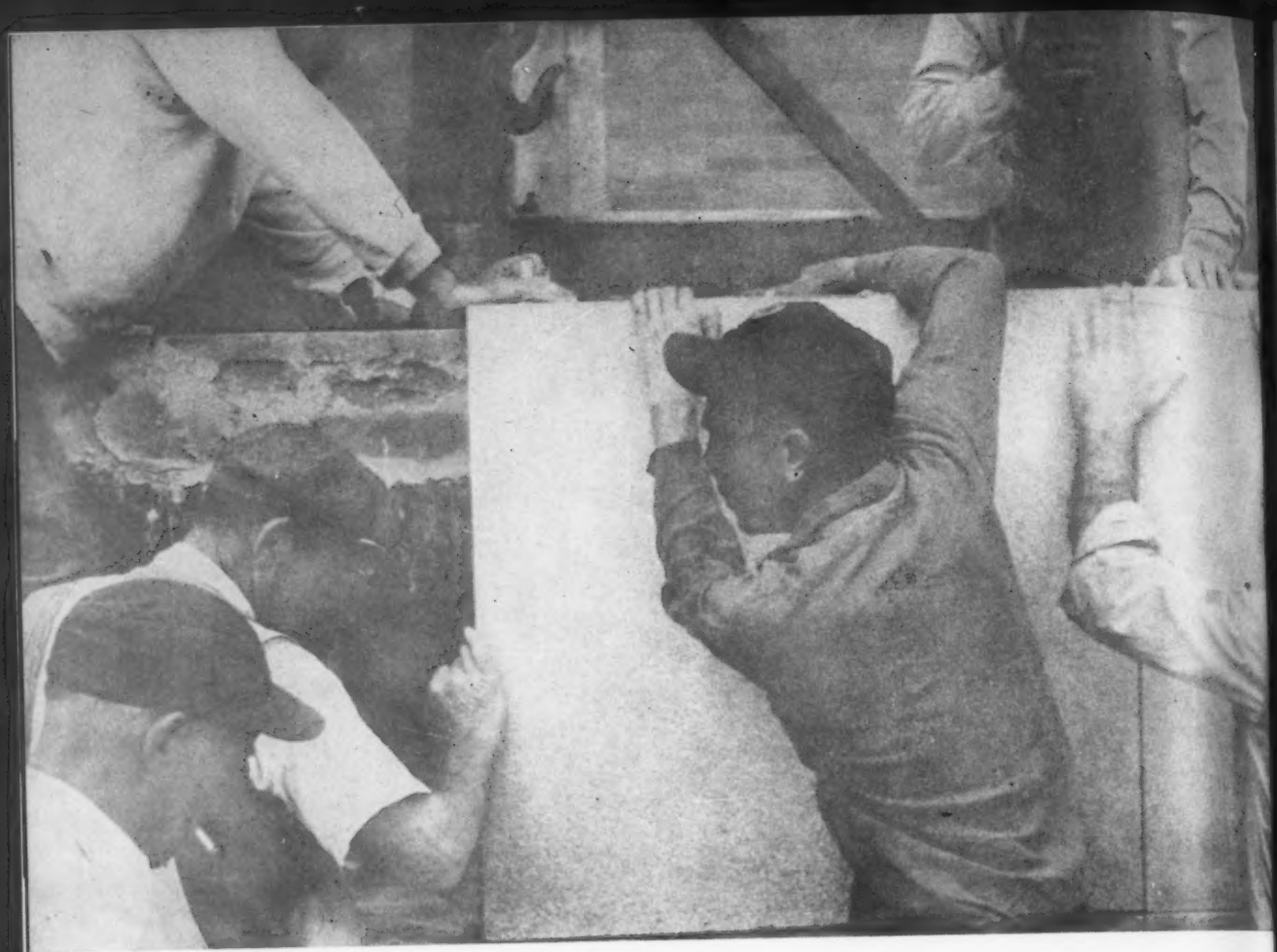
TRIVA effectively annihilates vaginal microorganisms, restores mucosal integrity and accelerates healing for rapid recovery.

Non-irritant, non-toxic, non-staining, TRIVA is a safe vaginal douche ... even during pregnancy. Effective in any pH medium. Most cases of trichomonal, monilial and non-specific vaginitis become asymptomatic and organism free in 6 to 12 days. For complete data see Physicians' Desk Reference, 1957, page 429.

Full treatment package with literature supplied — write Dept. 3-O. Now available: color film "Management and Mismanagement of Breech Presentation."

BOYLE **BOYLE** & Company, *Dept. 3-O, Los Angeles 54, Calif.*

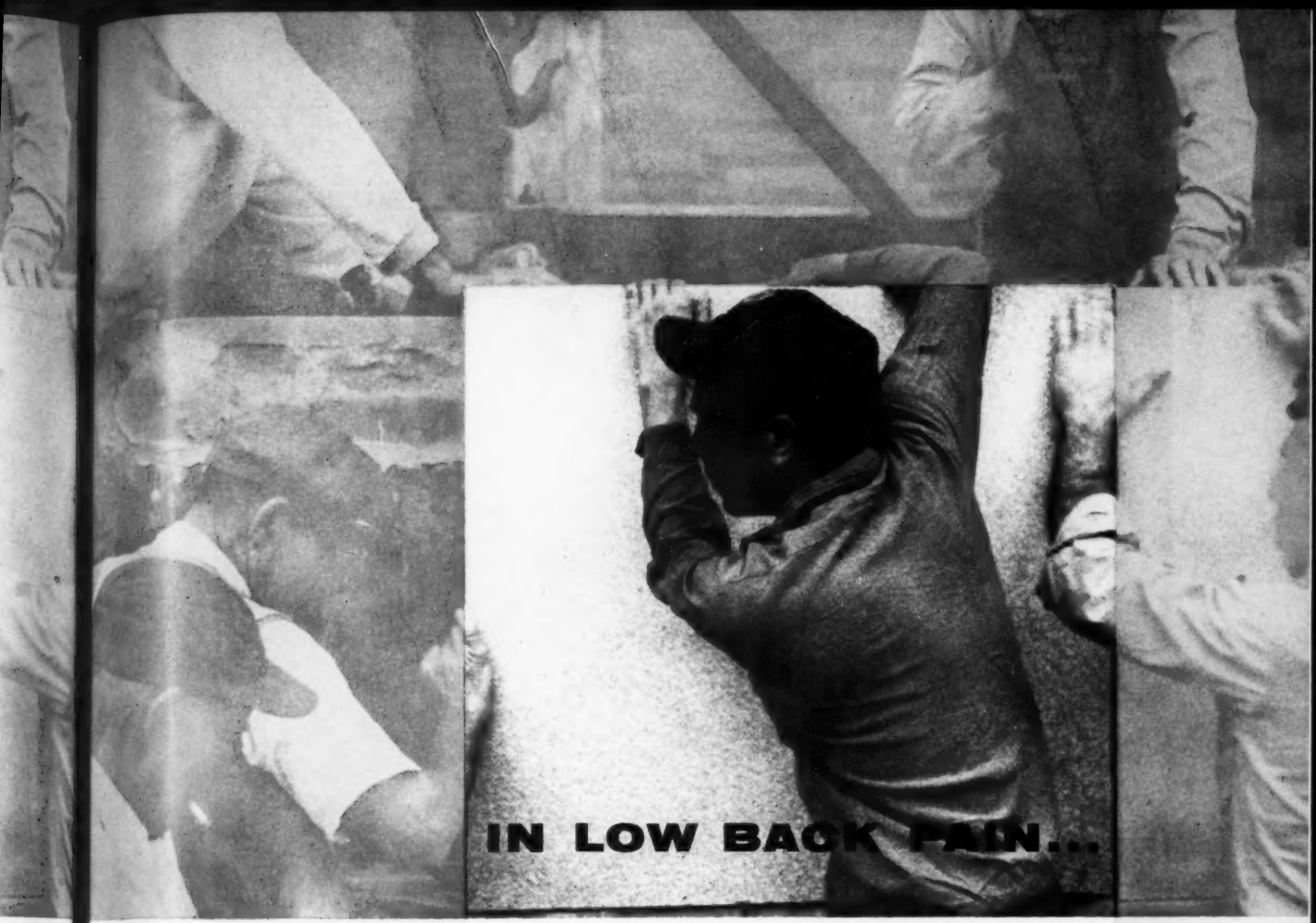
AVAILABLE AT ALL PHARMACIES: *in convenient packages of 24 individual 3 Gm. packets, each containing 35% Alkyl Aryl sulfonate (surface-active, germicidal and detergent), 0.33% Disodium ethylene bis-iminodiacetate (chelating agent), 53% Sodium sulfate. 2% Oxyquinoline sulfate (bactericide, protozoacide) and 9.67% dispersant.*



flexin®

(Zoxazolamine,* McNeil)

engestic® coated or plain



REDUCES SPASM
IMPROVES FUNCTION

"...17 of the 20 patients with post-traumatic muscle spasm of the low back had excellent or good responses."[1]

"In acute and chronic recurrent low back syndrome, seven of eight patients showed visible objective improvement."[2]

1. Wallace, S. L.: Zoxazolamine (FLEXIN) in Low Back Disorders, to be published.
2. Settel, E.: FLEXIN in Geriatric Skeletal Muscle Spasm, Am. Pract. & Digest Treat., in press.

Available: Tablets, Engestic Coated, pink, 250 mg.; bottles of 36. Tablets, scored, yellow, 250 mg.; bottles of 50.
*U. S. Patent Pending

McNEIL McNeil Laboratories, Inc • Philadelphia 32, Pa.
09857

This might have been prevented, but...

... her parents "didn't want to bother Doctor Jones" about anything as commonplace as acne. Moreover, drawn-out treatment "would be expensive" and this unfortunate young woman (whom we'll call Betty) "would outgrow her acne" . . . or so they believed.

So, like the good daughter she was, Betty followed the misconceptions of her parents and did not seek treatment for her acne. Today, she's paying the twofold consequences of such neglect:

Her facial scarring is permanent and plain to see. Not visible, though equally severe, is her disquieting emotional withdrawal.

Betty symbolizes why we periodically remind you—

When a teen-ager comes to you for <u>any</u> reason . . . treat that acne, too!

Smith, Kline & French Laboratories, Philadelphia

makers of **ACNOMEL*** (Cream & Cake)
the most widely prescribed acne preparation

*T. M. Reg. U.S. Pat. Off.

Mrs. Diet Devicer is a Vitamin Slicer

10 important vitamins in each tiny Dayalet:

Vitamin A	3 mg. (10,000 units)
Vitamin D	25 mcg. (1000 units)
Thiamine Mononitrate	5 mg.
Riboflavin	5 mg.
Nicotinamide	25 mg.
Pyridoxine Hydrochloride	2 mg.
Vitamin B_{12} (as cobalamin concentrate)	2 mcg.
Folic Acid	0.25 mg.
Calcium Pantothenate	5 mg.
Ascorbic Acid	100 mg.

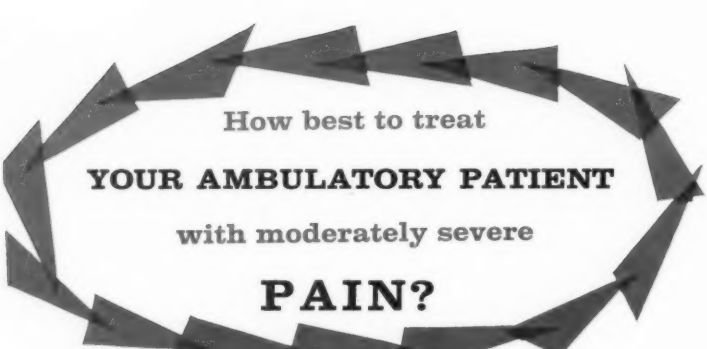
703076

She's been on so many fad diets that she's inventing her own. Poundage loss is her goal—nutrition take the hindroad. Pretty soon, she'll be around to see you, wondering what hit her. While you're getting her off her one-track menu, keep Dayalets in mind. They're easy-to-take, and will help her along the road to sounder—and saner—nutrition.

Dayalets®

(Abbott's Multiple Vitamins)

Abbott



Painful, but not incapacitating, upper respiratory disorders. Arthritis. Rheumatism. Sprains. Lacerations. Contusions. Bursitis.

What to prescribe? Aspirin? No. The patient with moderately severe pain is so uncomfortable that he needs more.

An APC preparation? No. And again for the same reason.

Codeine? No again. The ambulatory patient's pain is seldom quite severe enough to warrant a narcotic.

What, then?

'Daprisal': the analgesic which not only relieves pain but also lifts the patient's mood.

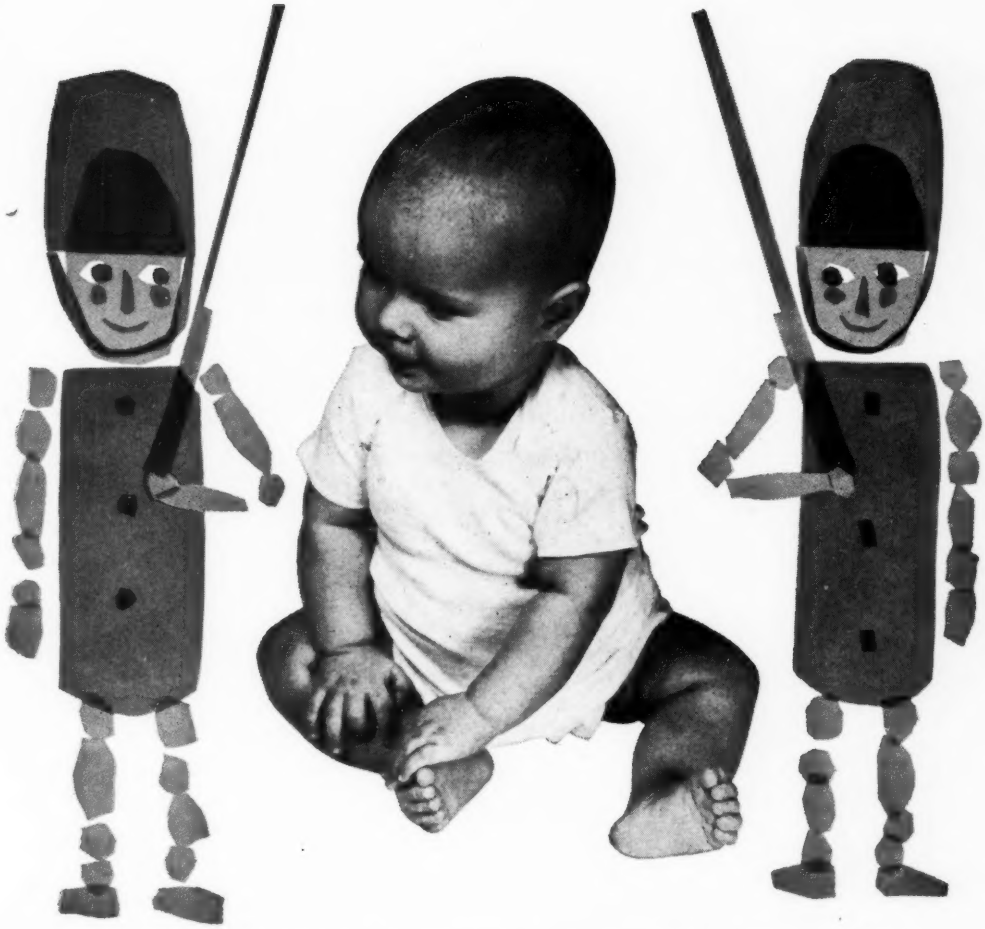
Obviously, when the ambulatory patient is in pain, you first treat the underlying physical cause. But then you try to get him out of the doldrums which intensify his discomfort. You try to cheer him up. You try to help him "feel better," so he can face up to his daily tasks.

With Daprisal's mood-lifting 'Dexamyl' components you *do* help the patient "feel better". With Daprisal's highly effective analgesic components you treat the pain itself. *With 'Daprisal' you treat the whole patient, not just his pain.*

DAPRISAL* | *a combination of aspirin, phenacetin and the* **mood-lifting components of DEXAMYL***

Smith, Kline & French Laboratories, Philadelphia

*T.M. Reg. U.S. Pat. Off.



for specific protection against iron deficiency...

Fer-In-Sol® iron in a drop for infants and children

"A deficiency of iron is the most frequent cause of anemia in children, and the most common nutritional deficiency in children in the United States."[1]

Small daily doses of Fer-In-Sol "were sufficient to maintain hemoglobin values at a constant level throughout the latter half of infancy in all [37] full-term infants."[2]

For specific protection against iron deficiency, Fer-In-Sol provides iron only—as ferrous sulfate—in an acidulous vehicle for better absorption. It is well tolerated. And its pleasant citrus flavor makes it readily acceptable to young children.

12657

Fer-In-Sol is supplied in 15 cc. and economical 50 cc. bottles with unbreakable plastic 'Safti-Dropper' calibrated for easy dosage measurement.

Each 0.6 cc. contains about 1 grain ferrous sulfate. A 0.3 cc. dose supplying 7.5 mg. iron provides the full Recommended Daily Allowance for children up to 4 years.

(1) Diamond, L. K.; Smith, N. J., and Vaughan, V. C., III, in Nelson, W. E.: Textbook of Pediatrics, ed. 6, Philadelphia, W. B. Saunders Company, 1954, p. 962. (2) Niccum, W. L.; Jackson, R. L., and Stearns, G.: A.M.A. Am. J. Dis. Child. *86*:553, 1953.

MEAD JOHNSON

SYMBOL OF SERVICE IN MEDICINE

Activated Assimilation of Iron

"Our results . . . have been so striking . . . dramatic . . . rapid."[1]

". . . a more rapid and constant hemoglobin rise

. . . with no evidence of toxicity."[2]

Mol-Iron®

Now

Mol-Iron with Vitamin C

*Better tolerated Mol-Iron is now available with vitamin C (75 mg. per tablet), because ascorbic acid has been shown to promote increased absorption of orally administered iron.[15]

Dosage: Adults—2 tablets t.i.d. after meals.
Children—6 to 12 years—1 tablet t.i.d. after meals.

Supplied: Bottles of 100 only.

Well-tolerated—even by patients with a history of iron intolerance.[3, 4]

More rapid maximal hemoglobin response shortens the period of treatment usually necessary with other preparations.

Outstanding efficacy and tolerance is attested by more original investigations and clinical evaluations[1-14] than have been reported for any other iron preparation.

Tablets

ALSO AVAILABLE AS **LIQUID** AND **DROPS**

REFERENCES:

1. Dieckmann, W.J., and Priddle, H.D.: Am. J. Obst. & Gynec. 57:541, 1949.
2. Mercer, J.P., and Zann, G.J.: Report on unpublished data.
3. Neary, E.R.: Am. J. Med. Sc. 212:76, 1946.
4. Kelly, H.T.: Penn. M.J. 51:999, 1948.
5. Chesley, R.F., and Annitto, J.E.: Bull. Marg. Hague Mat. Hosp. 1:68, 1948.
6. Forman, J.B.: Connecticut M.J. 14:930, 1950.
7. Healy, J.C.: J. Lancet 66:218, 1946.
8. Lund, C.J.: Am. J. Obst. & Gynec. 62:947, 1951.
9. Contemporary Progress: M. Times 74:344 (Dec.) 1946.
10. Briscoe, C.C.: Am. J. Obst. & Gynec. 63:99, 1952.
11. Cox, K.D.: Postgrad. Med. 11-219, 1952.
12. Tuttle, A.H., and Etteldorf, J.N.: J. Ped. 41:170, 1952.
13. Dieckmann, W.J., et al.: Am. J. Obst. & Gynec. 59:442, 1950.
14. Talso, P.J.: J. Insurance Med. 4:31, 1948-49.
15. Coleman D.H., Stevens, H.R., Jr., and Finch, A.C.: Blood, 10:567. 1955.

Dosage: Adults — 2 tablets t.i.d. after meals.
Children — 6 to 12 years — 1 tablet t.i.d. after meals.

Supplied: Tablets in bottles of 100. Liquid in bottles of 12 fluid oz.
Drops in bottles of 15 and 50 cc. with calibrated dropper.

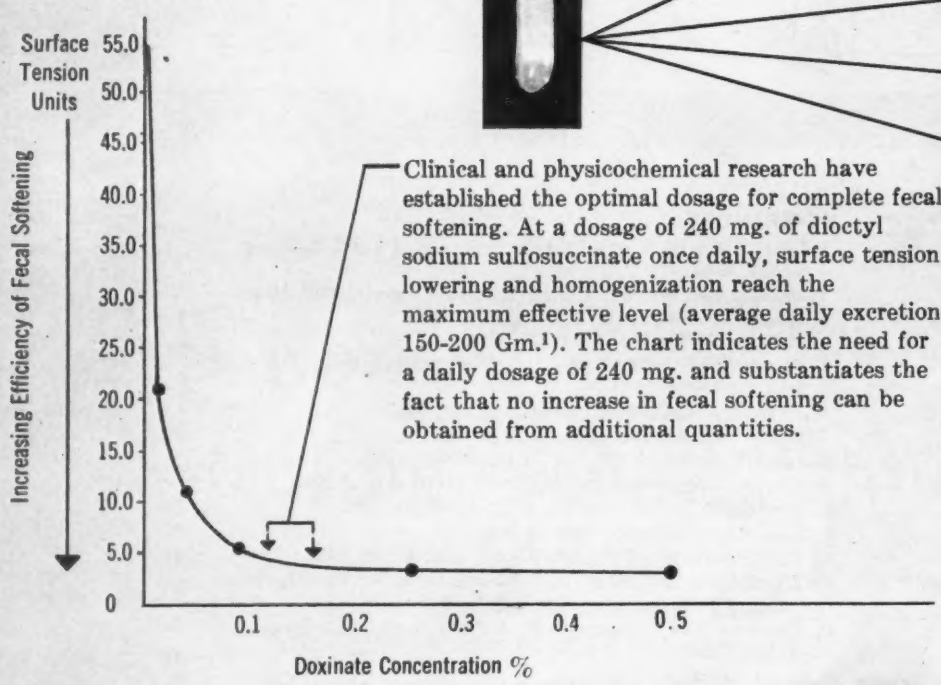
WHITE LABORATORIES, INC. • KENILWORTH, N. J.

The answer...

DOXINATE®

THE ORIGINAL FECAL SOFTENER

IN CONSTIPATION



Clinical and physicochemical research have established the optimal dosage for complete fecal softening. At a dosage of 240 mg. of dioctyl sodium sulfosuccinate once daily, surface tension lowering and homogenization reach the maximum effective level (average daily excretion 150-200 Gm.[1]). The chart indicates the need for a daily dosage of 240 mg. and substantiates the fact that no increase in fecal softening can be obtained from additional quantities.

1. Best & Taylor, The Physiological Basis of Medical Practice, 6th Ed.

to effective fecal softening

240 mg.

ONE CAPSULE DAILY

provides

MAXIMUM EFFECTIVENESS

with

PATIENT CONVENIENCE

and ECONOMY

In The Interest of Medicine Since 1870

Lloyd *BROTHERS INC., CINCINNATI, OHIO*

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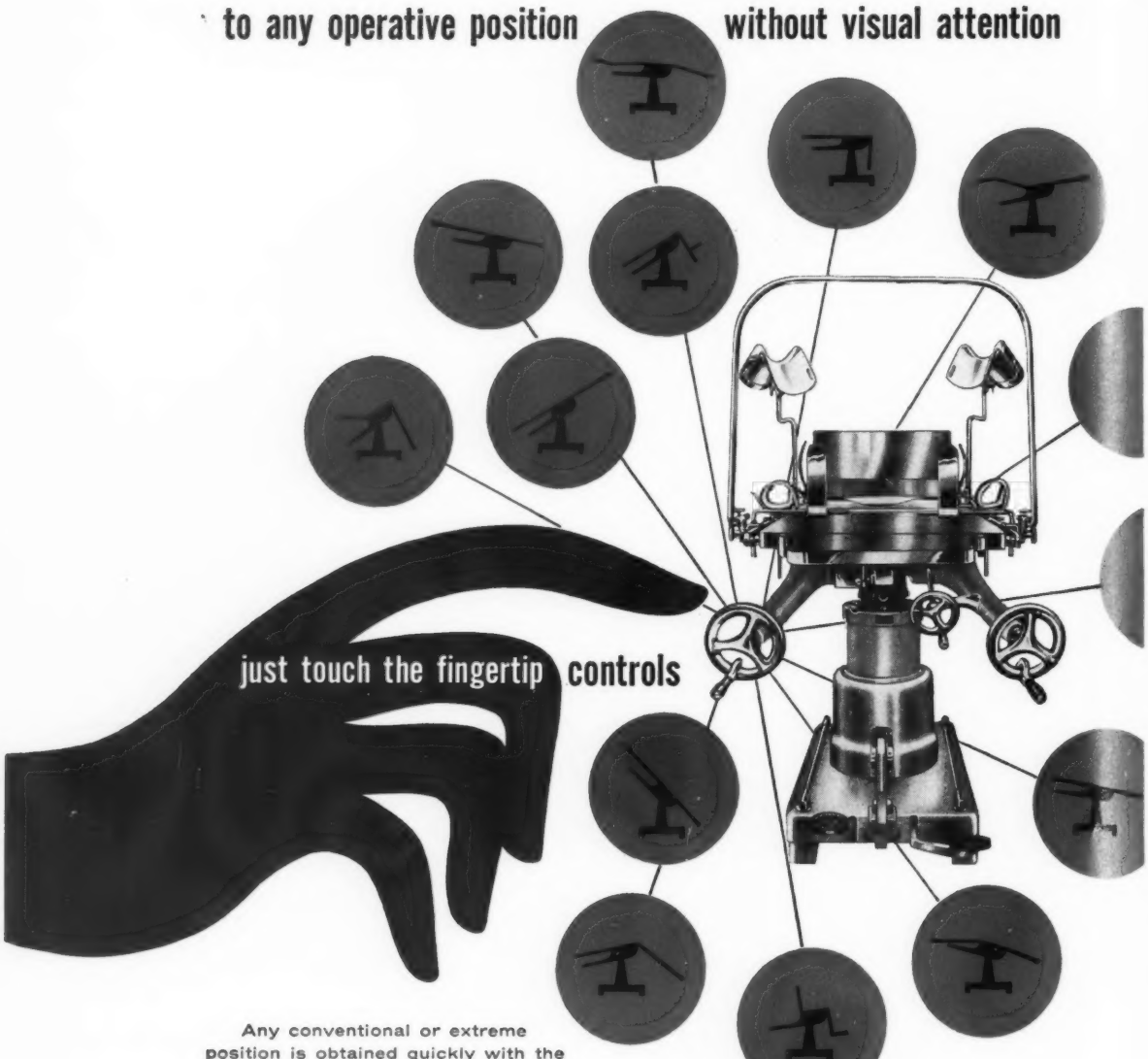

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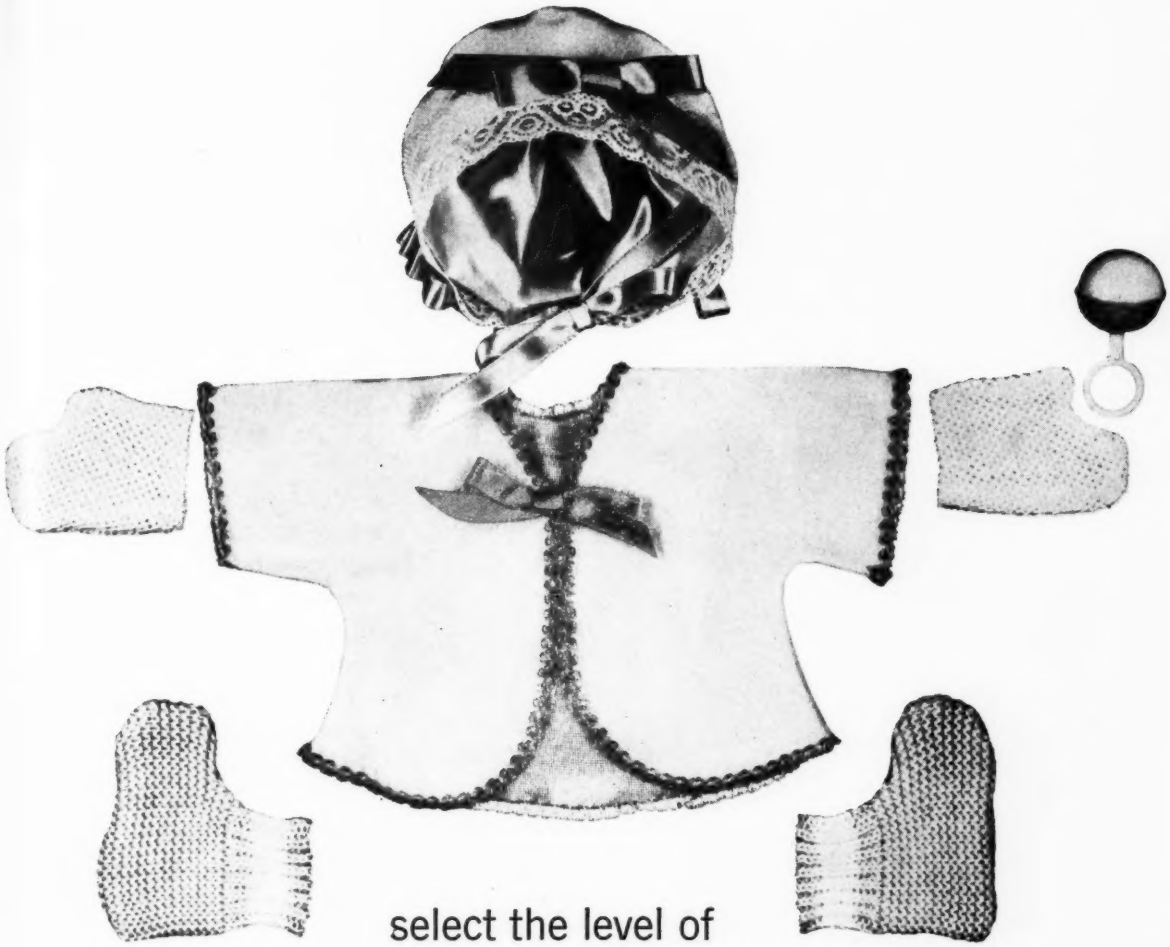

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Surgical Issue—IV*

Management of SKULL INJURIES

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THE HIGH INCIDENCE OF skull fractures and associated head injuries in modern life makes their management a continuing concern for everyone who engages in traumatic surgery or medicine. Each year these injuries exact staggering tolls in death—and, still worse, in permanent mental and physical incapacity. As surgeons obliged to mitigate this devastation, we welcome advances applicable to the management of these casualties.

Diagnosis

Roentgen Rays.—Diagnosis of skull fractures usually rests on radiographic examination, which should be routine in acute head injuries. Roentgenograms may visualize: (1) linear cracks of the base or vault, (2) suture diastases, or (3) more extensive comminutions, with or without displacement of fragments.[1] Roentgenograms may fail to demonstrate fractures, especially those involving the base of the skull.[2] They are not reliable indicators of the extent of depression or displacement of skull fragments.

Clinical Signs.—Certain clinical signs are diagnostic.[3] Large depressed fractures are palpable; however, crepitus should not be elicited because of danger of increased brain injury or serious hemorrhage. Scalp hematomas presenting soft centers and indurated edges may be mistaken for small depressed fractures. Linear fractures and suture separations are not palpable unless the margins are widely separated, but they can cause recognizable subgaleal extravasations. Thickening of the temporal muscle and postmastoid bruising (Battle's sign), when present, are generally reliable signs of skull fracture.

Conjunctival hemorrhage without visible posterior limits is a sign of anterior fossa basilar fracture with retro-orbital bleeding, especially with conjunctival edema and displacement of the eyeball with limitation of its movements.[3] Conjunctival hemorrhage due to local injury is by contrast more limited. The familiar black eye, which occurs both with and without skull fracture, is valueless as a differential sign.

Cerebrospinal Fluid Leakage.—Cerebrospinal fluid leakage (identifiable by its sugar content) from a scalp wound, the nose or ear, and the presence of brain tissue in the discharge, are incontrovertible evidence of skull fracture.[3] Associated intracranial collections of air may be demonstrable by x-ray.

Profuse and persistent bleeding from the nose or ear also signifies basilar fracture,[3] but this must be distinguished from hemorrhage due to soft tissue injuries (of these parts).

Cerebrospinal fluid leakage from the ear usually ceases spontaneously within a week or so.[4] The external auditory canal should be kept clean and drainage unobstructed.

Cerebrospinal fluid leakage from the nose may require surgical intervention. Use of antibiotics now permits awaiting spontaneous closure for more than the 2 days formerly considered the limit before operation.[4] Dislodged ethmoid fragments sometimes prevent spontaneous healing. To accomplish surgical repair[5] the ethmoidal region is exposed intradurally and the dural wound closed with a muscle graft or fascial transplant.

Obviously, compound fractures may extend into the accessory nasal sinuses or potentially infected parts of the temporal bones and be quite as dangerous as those which communicate with scalp wounds. Such concealed compounding should always be looked for, and antibiotics should be administered when the situation is recognized.

Complications

Uncomplicated skull fractures are of little clinical importance. No special treatment is required if it is certain there are no complications.[2] Except where medicolegal factors are involved, it is probably a mistake to call a simple skull fracture to the patient's attention because of the danger of encouraging some kind of troublesome functional overlay.[3] It has become almost commonplace for surgeons to state that it is never the injury to the skull which matters, but rather the amount of damage to the underlying nervous tissue and its coverings.[6] Successful management of skull fractures, therefore, depends on the prevention or effective treatment of their complications.

The complications of skull fracture are:[2] (1) opening of the cranial cavity to potential infection, (2) reduction of intracranial capacity by depression of calvarial fragments, (3) laceration of meningeal vessels and intracranial hemorrhage, and (4) cranial nerve injuries.

Operations following head injuries should be conducted under local anesthesia.[7] General anesthetic agents and narcotics are cerebral depressants which also promote undesirable increase of intracranial pressure and are contraindicated in brain injuries. Sedation should be minimal. Salicylates, occasionally combined with small amounts of codeine, usually provide adequate analgesia if restlessness is controlled with Thorazine and chloral hydrate or paraldehyde. Barbiturates should be used with caution.

Compound Skull Fractures.—Antibiotics have robbed open head wounds of much of their former terror, but neglect of scalp wounds and inadequate

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débridement of compounded skull fractures still invite complicating infection. The various forms of infection present special problems of therapy:

Osteomyelitis of the Skull: In osteomyelitis of the skull, suppuration with absorption and sequestration of involved bone occurs. The process may remain localized and mild, especially if antibiotics are given, or it may be fulminating. Eradication requires excision of involved bone. Repair of resulting cranial defects for protective and cosmetic purposes is best delayed at least 6 months to allow infection in the operative site to disappear, since the plastic or tantalum plates used for repair are foreign bodies.

Septic Meningitis: Purulent inflammations caused by pyogenic organisms, and classified topographically as pachymeningitis and leptomeningitis, can result from penetrating head wounds or compound fractures.[8] Inflammation is intense, and pus often fills the subarachnoid channels. In some acute cases, absorbed toxins impair consciousness, or vascular thromboses cause paralyses or other neurologic disorders. Prevention in all these instances is easier than cure.

Brain Abscess: Brain abscesses result from suppuration within the brain and cause massive destruction and neurologic deficiencies. Some become well-circumscribed collections of pus in a rough-walled capsule, formed about 2 weeks after injury. This encapsulation is an indication for surgical treatment; anaerobic abscesses which are not encapsulated remain inoperable. Modern surgical methods are lifesaving in about 50 per cent of patients who survive long enough for encapsulation to occur. Without surgical drainage or excision, abscesses are invariably fatal.

Surgery for Compound Fractures: Infections in compound fractures can be reduced by definitive surgery and antibiotics.[9] Devitalized contaminated scalp margins are excised. Compound linear fractures are inspected for incarcerated foreign debris and are débrided with a rongeur if necessary. Skull fragments are removed, and skull defect margins are smoothed with the rongeur. Penetrating brain wounds are débrided by aspiration. Dural lacerations are sutured, or their margins are excised as indicated, and resulting defects are repaired with dural substitutes (such as temporal fascia). Cranioplasty may be attempted immediately or delayed, depending on the degree of contamination, lapse of time following injury, and thoroughness of débridement. When fractures open the frontal sinus, the mucosal lining is removed and the frontonasal duct occluded to promote obliteration of the sinus by granulation tissue.

Depressed Fractures.—Brain compression of any magnitude due to depressed skull fracture requires prompt elevation of the depressed fragments. These are removed in compound fractures as described above. In simple depressed fractures, the site is exposed by reflecting the scalp and periosteum. Depressed fragments are lifted out or freed with a rongeur. Cerebral wounds are débrided, intracranial hemorrhage controlled, and dural lacerations repaired as necessary. In the absence of contamination, skull fragments can be replaced in a suitable position and secured during closure of the periosteum and scalp. This method is preferable to other cranioplastic technics.

Intracranial Hemorrhage.—Subarachnoid Hemorrhage: Simple traumatic subarachnoid hemorrhage is the most common and least serious form of intracranial hemorrhage complicating head injuries. It can occur with minimal meningovascular damage and without localizing neurologic signs. Clinically, the cerebrospinal fluid is bloody, and meningeal irritation causes headache and nuchal rigidity. The extravasated blood disintegrates and tends to be absorbed eventually, but obstructive arachnoidal adhesions may result. These cause a communicating hydrocephalus manifest by chronically increased intracranial pressure, dilatation of the ventricles, and cerebral atrophy. Frequent spinal fluid drainage is indicated, as long as fluid is bloody or xanthochromic, to control intracranial pressure and headache and to minimize adhesive sequelae.

Cerebral Contusion and Laceration: Cerebral contusions and lacerations are hazards of basilar fractures and frequently complicate depressed or extensive linear fractures of the vault. They cause subarachnoid bleeding and in addition result in serious disruptions of brain tissue. Loss of consciousness for 6 hours or more usually occurs, often with localizing neurologic signs. If complicating brain swelling threatens life, intracranial decompression by removal of macerated brain tissue may be lifesaving. Cerebral débridement also minimizes epileptic sequelae.

Subdural Hematoma: Extravasations into the subdural space disintegrate slowly and expand by imbibing cerebrospinal fluid. The brain may compensate for gradual compression for months or years before symptoms appear. Fluctuating disturbances of motor and sensory functions coming on after head injury should make the surgeon suspect subdural hematoma. Bilateral trephination of the skull (under local anesthesia) affords positive diagnosis and treatment with practically no risk. Failure to diagnose or tardy trephination forfeits the patient's life.

Unless the brain re-expands after evacuation of subdural hematoma the patient does not recover. Failure to re-expand is due to impaired circulation and lessened cerebrospinal fluid production resulting from marked cerebral distortion. For the same reasons, abnormally low cerebrospinal fluid pressures are often noted in subdural hematoma. Re-expansion can usually be accomplished on the operating table by manometrically controlled intrathecal injection of normal saline solution via lumbar puncture.

Epidural Hemorrhage: Epidural hemorrhage is the most emergent of the meningeal hemorrhages. It usually results from laceration of the middle meningeal artery by skull fracture. Arterial hemorrhage rapidly strips the dura from the inner table of the skull. Additional bleeding points are created as dural vessels communicating with the diploic vascular channels are torn.

Successful management of skull fractures depends on the prevention or effective treatment of their complications

Severe cerebral compression quickly results. Consciousness is soon lost; a lucid interval may or may not occur. Death in unoperated cases usually takes place within 24 hours. In a fracture crossing the middle meningeal artery, any evidence of developing cerebral compression calls for prompt trephination of the skull, evacuation of the hematoma, and control of the bleeding points. Intervention at the earliest possible moment is essential to success. If surgery has not been too long delayed, recovery is often dramatic.

Cranial Nerve Injuries.—

The cranial nerves are susceptible to laceration and contusion by basilar fractures. Cranial nerves which have suffered lacerations or contusions are irreparable. The nerves of the posterior cranial fossa (ninth to twelfth *cranial*) are least vulnerable.

Unilateral test of olfaction after head injury often reveals impaired sensibility due to contusion or laceration of an olfactory tract or bulb. Visual field defects may reveal optic nerve injury.

The nerves controlling ocular movements (third, fourth, and sixth cranial) can be affected by fracture at the superior orbital fissure or by fractures and traumatic aneurysms involving the cavernous sinus. Lesions here cause pain in the eye in addition to ocular paralyses, because of simultaneous involvement of the ophthalmic nerve. The other divisions of the trigeminal nerve are occasionally injured at their foramina with resulting sensory impairments in the facial region. Fractures of the petrous portion of the temporal bone may cause facial paralysis (seventh cranial nerve) or impairment of hearing and tinnitus and vertigo (eighth cranial nerve).

Facial Nerve Paralysis: In facial paralysis due to head injury, the mode of onset is of prognostic importance. This is because delayed onset and incomplete paralysis can be due to compression of the nerve by edema or hemorrhage in the facial canal rather than to severance by fracture. Regeneration of the nerve is therefore possible, and some recovery of function is to be expected if the paralysis is incomplete or its onset delayed. On the other hand, immediate onset of a complete peripheral type of facial paralysis indicates laceration of the nerve and prognosis for recovery is then poor.

The complete peripheral type of facial nerve paralysis is easily recognized. On the involved side, the forehead does not wrinkle and the palpebral fissure widens because the orbicularis oculi relaxes. The unwary may misinterpret this as ptosis of the opposite side, but this is a double mistake as it indicts both the wrong side and the wrong nerve (third cranial instead of seventh). In facial nerve paralysis the nasolabial groove is also flattened and the mouth is drawn toward the nonparalyzed side. The paralyzed eye cannot be closed. During attempted closure this eye is seen to roll upward and outward (Bell's phenomenon).

The cosmetic disability may be treated surgically with fascial or tantalum mesh implants to support the sagging side of the face. Tonus can also be restored to the paralyzed muscles by hypoglossal-facial or spinal accessory-facial nerve anastomoses. These operations sacrifice the distal parts of the hypoglossal or spinal accessory nerves. However, unilaterial paralysis and atrophy of the tongue or shoulder droop may be less objectionable to the patient than permanent complete facial paralysis.

Oculomotor Nerve Signs: By contrast, true ptosis is seen in peripheral oculomotor nerve paralysis. The eye cannot be opened by action of the levator palpebrae superioris. The eyeball is tonically fixed in upward and outward rotation, and the pupil is dilated and fixed.

Oculomotor nerve paralysis is a grave prognostic sign in head injury. It suggests increased intracranial pressure from edema or hemorrhage sufficient to cause tentorial herniation of the temporal lobe. This compresses the oculomotor nerve. Downward displacements of the brain stem due to increased intracranial pressure can also cause paralysis of the abducens nerve. This is shown by inability to turn the paralyzed eye to the side.

Tentorial Cerebral Herniation: As the uncinate region of the temporal lobe herniates through the incisura of the tentorium cerebelli, it compresses the brain stem and its blood vessels as well as the oculomotor nerve. Compression of the posterior cerebral artery can cause infarction of the posterior two thirds of the inferior surface of the temporal lobe and part of the occipital lobe. Venous compression may cause secondary congestive petechial or fatal "blowout" hemorrhages in the brain stem. These are often the reason patients fail to recover if they have been allowed to lose consciousness prior to operation for extradural or subdural hematomas.

If temporal lobe hernations are diagnosed ante mortem, strangulation can be relieved by craniotomy and division of the cerebellar tent. This is formidable surgery, but it seems justified by the otherwise grave prognosis. Rowbotham,[3] in reviewing extensive experience, reported no known case of survival by patients presenting bilaterally fixed and dilated pupils after head injury.

Spinal Puncture.—Spinal puncture in the presence of actual or incipient tentorial herniation or cerebellar pressure cone formation can precipitate disaster. Papilledema, oculomotor or abducens nerve paralyses, and signs of medullary embarrassment are warnings that spinal puncture may be a critical maneuver in the management of craniocerebral injury.

Conclusions

The management of skull injuries demands prompt recognition and treatment of potential and actual complications. Compound fractures require antibiotics and definitive surgery. Depressed fractures of any size should be elevated promptly, repair of cranial defects planned, and associated meningeal hemorrhage controlled. Cranial nerve injuries are usually without remedy. Fortunately, most skull fractures are uncomplicated, of little clinical significance, and require no special treatment other than ruling out complication.

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References

1. Orley, A.: Neuroradiology. Charles C Thomas, Springfield, Ill., 1949.

2. Evans, J. P.: Acute head injury. Charles C Thomas, Springfield, Ill., 1950.

3. Rowbotham, G. F.: Acute injuries of head; their diagnosis, treatment, complications and sequels. Ed. 2. Williams & Wilkins Co., Baltimore, 1945.

4. Spurling, R. G.: Craniocerebral trauma, in Surgical treatment of nervous system, edited by F. W. Bancroft and C. Pilcher. J. B. Lippincott Co., Philadelphia, 1946, pp. 27-62.

5. Kahn, E. A., *et al.*: Correlative neurosurgery. Charles C Thomas, Springfield, Ill., 1955.

6. Wilson, J. V.: Pathology of traumatic injury. Williams & Wilkins Co., Baltimore, 1946.

7. Davis, P. B.: Anesthesia and neurologic patient. J. Am. Osteop. A. 53:198-199, Nov. 1953.

8. Wilson, S. A. K.: Neurology, Ed. 2, edited by A. N. Bruce. Williams & Wilkins Co., Baltimore, 1955, Vol. 1.

9. Gurdjian, E. S., and Webster, J. E.: Operative neurosurgery, with emphasis on procedures in trauma. Williams & Wilkins Co., Baltimore, 1952.

CEREBRAL angiography

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IN ALL FIELDS of medical endeavor, the dictum of A. T. Still, "Find it, fix it, and leave it alone," is important. In many instances, however, the phase of "find it" is paramount, and clinical impressions and findings are at times inadequate for this purpose. As a result, numerous diagnostic studies have been made and numerous procedures have been devised to determine the etiology and localization of abnormality. The field of neurology is no exception, and the quest for help and information has been pursued in connection with many of its problems.

Myelography and pneumoencephalography, instituted first by Dandy,[1,2] have proved valuable aids in the diagnosis and localization of lesions by outlining the cerebrospinal fluid system and its cisterns, and making it possible to visualize on the x-ray film encroachment upon this system. Intracranially, this principle left something to be desired, and since intracerebral vascular lesions were becoming more important diagnostically, it was imperative that the vasculature of the head be studied, if it were at all possible. In 1927, under the direction of Egas Moniz,[3] the first human carotid angiogram was performed. This supplied information about the vasculature, the blind spot between the cranium and the ventricular system.

Following the teachings of Egas Moniz and others, the introduction of radiopaque media into the cerebral circulation, accompanied by immediate x-ray examination, offered the means to carry out study of the vasculature. This procedure was adopted by many specialists as time passed. At the Philadelphia College of Osteopathy, the radiologist and neurosurgeon began teamwork in 1951 to overcome some of the technical difficulties on the procedure and have now produced a routine for cerebral angiography, which is outlined below.

The utilization of a good plan produces results in adequate diagnostic interpretation of the cranial vasculature. Although this is basically an arterial technic, the venous phase can also be examined.

The opaque medium originally used was Diodrast (Iodopyracet); Diodrast, 75 per cent, was used at first, but this was soon replaced by a 35 per cent solution. At present Urokon (sodium acetrizoate, 30 per cent) is used. The amount of the solution injected has been reduced from 20 cc. to 10 cc. per position, and both percutaneous and visual exposure methods have been used for administration. The age of patients has varied from 2 to 68 years.

All patients had x-ray examinations of the skull prior to angiography. Almost all patients have been evaluated by a neurologic consultant and many have been under the combined services of an internist and a neurosurgeon. Both male and female patients have had angiography. Some patients have had no anesthesia for the procedure and some have had local anesthesia, but the majority have had general anesthesia. Unilateral or bilateral angiograms were performed as indicated.

Technic

The technic of cerebral angiography involves injection of an opaque solution into one of the great arterial vessels of the neck. As the solution disseminates through the cranial arteries and into the venous system, its progress is recorded by serial film examination. Either the carotid or the vertebral arterial system is used, depending upon the suspected location of the lesion; however, the carotid system is used more frequently. The patient is first given a sedative and prepared for major surgery, then taken to the special services x-ray department by carrier. After adequate checking, he is anesthetized; general anesthesia with Pentothal sodium has been used almost exclusively for nonmoribund cases. Sometimes endotracheal tubes are utilized, but usually not.

The patient is placed in a good position of cervical extension and, under aseptic conditions, the carotid vessel is surgically exposed or approached percutaneously. The common carotid is most frequently used as the injection site. When the surgical method is employed, an incision is made in a skin crease just below the thyroid cartilage. The vessel is dissected free and a piece of sterile umbilical tape is looped beneath the vessel. Ten cc. of 35 per cent Diodrast or 30 per cent Urokon solution is injected as rapidly as possible by means of an 18 gauge needle, with the head in a lateral position. Then the head is placed in the anteroposterior position and the injection of the opaque medium is repeated.

When adequate studies have been made, the needle is withdrawn, the bleeding stopped, and the platysma and skin incisions sutured. Anesthesia is terminated and the patient is returned to his room to be placed in oxygen for several hours. He may be ambulatory as soon as he feels able, and the neck sutures are removed in 4 to 5 days.

It is our feeling that the utilization of general anesthesia tends to prevent and lessen cerebral spasm. In our series, when the patient has been under the influence of general anesthesia, we have not observed any allergic or anaphylactic reactions due to the opaque media. A physiologic change which likely occurs at the

blood-brain barrier may allow for an asymptomatic interchange of medium and normal cerebral fluid.

We have used the common carotid most often as the site of injection because the site of occlusion frequently is low in the cervical portion of the internal carotid artery, and the common carotid approach affords a reliable check on the exact location of the occlusion. In some cases of occlusion of the internal carotid artery, anastomosis of the intracranial portion of the internal carotid and the external carotid artery does occur and it can be thus visualized. Also, in a mechanically good administration of the opaque solution into the common carotid artery, sufficient concentration is maintained to visualize both the external and internal carotid systems. Another factor is that the common carotid artery is readily accessible either for exposure or percutaneous injections. In event of serious complications during angiography, the exposed carotid allows quick and efficient ligation if necessary.

Bilateral angiography is performed more efficiently with exposure of both carotids; injection is made into one side while the other is compressed. Compression of the exposed artery is more effective than that of the unexposed.

Percutaneous injection of the carotid is quite simple at times. At other times repeated attempts must be made before an adequate tap is accomplished, which results in a badly traumatized carotid vessel and repeated punctures of the jugular vein. As a result of such trauma, spasm of the carotid and its branches sometimes occurs, and resultant symptomatology depends upon the length of time this spasm continues. Thrombosis has been attributed to traumatic violations of the vessel intima. Exposure of the common carotid artery brings into view the site of injection and minimizes trauma to the vessel wall.

Indications and contraindications

Sugar,[4] writing in 1954, listed the following indications for cerebral angiography: aneurysm, arteriovenous malformations, and arteriosclerotic or occlusive vascular disorders.

Primarily, any vascular lesion of the head, surface or intracranial, is a subject for angiography. Lesions in the path of the external carotid artery are easily localized, and vascular abnormalities, distortion, and distention are readily interpreted on the angiogram. Some lesions of the choroid plexus can be outlined. Aneurysms, thromboses, arteriovenous shunts, vasospasms, narrowed luminal caliber, and tumors are major clinical conditions in which cerebral angiography is of value.

There are no definite contraindications to cerebral angiography. Coma and hemorrhagic conditions are not barriers, nor is advanced age a contraindication. However, patients over 65 years of age who show marked evidence of arteriosclerosis are carefully screened because arteriosclerotic vessels do not tolerate opaque solutions well, and because of the danger caused by this technic of apparent sudden increased pressure on the friable vessels. It is my personal feeling that the force of the charge is quickly dissipated and does not seriously influence the circulation above the carotid siphon. This siphon acts as "Nature's protector" (like a step-down transformer) between the large vessels with relatively long straight courses, and the much smaller and less elastic intracranial vessels.

Each case is judged on its own merits, and no routine diagnostic contrast study is utilized. A case of actively bleeding ruptured aneurysm may have an angiogram performed immediately or deferred for several days or weeks; deferment has been our general practice. Patients with cerebral thrombosis (not including thrombosis of the carotid artery) have been subjected to angiography 1 week to 10 days after their accident. No patients with acute head trauma have undergone angiography. In cases of thrombosis of the carotid artery, angiograms have been performed as soon as the diagnosis was suspected.

Bilateral angiograms are performed when comparison or delineation of extension of lesion is required. This is done directly by injection of both carotids or indirectly by compression of the carotid opposite the one injected. Many failures of visualization of the contralateral carotid occur when the compression technic is employed. This may be the result of poor technic of compression or of intravascular resistance across the circle of Willis.

Complications

In our series of approximately 100 cases since 1951, we have had no complications. In the early part of the series, one patient did show a marked drop in blood pressure, without any neurologic accompanying signs, on return to her room, but this situation was quickly rectified. In this series, there has been no dizziness, headache, rash, exacerbation or diminution of symptoms, or production of temporary or permanent neurologic signs during or following cerebral angiograms.

This has not been the finding of other observers, however. Dunsmore, Scoville, and Whitcomb[5] reported complications in 9 per cent of 108 cases. Of these complications, 8 were major and 6 were minor, including death, permanent hemiplegia, transient hemiplegia, convulsions, carotid artery thrombosis, injury to the cervical sympathetic chain, and Diodrast skin sensitivity. Their conclusion was that the rationale of both treatment and prophylaxis in the complications of angiography appears to lie in the relief of vasospasm. They feel that the delayed nature of most serious complications of angiography is a matter deserving consideration, and that the etiology of such complications may be cerebral thrombosis secondary to imitative vasospasm.

Abbott, Goodall, and Gay[6] also have reported complications; however, judging by the complications mentioned, they must have confined their injection site to the internal carotid artery. In writing on the subject of cerebral angiography, Sugar[4] says that with improved radiographic apparatus a complete set of films should be available with no more discomfort and danger to the patient than that entailed in a simple anteroposterior radiograph.

Sutherland and his associates[7] feel that 25 per cent Iodopyracet produces less complications than the 35 per cent solution. In their series of 234 angiograms, 16 per cent showed major or minor complications while using 35 per cent Diodrast, but when using 25 per cent Diodrast (in 108 angiograms), less than 2 per cent showed complications. A total of 30 to 40 cc. of Diodrast was injected in each instance.

Interpretation

In the interpretation of the cerebral angiogram, it is extremely important to remember the existence of a multitude of apparently normal variations of the cerebral vascular tree. In postmortem examination of many cranial vascular systems, including patients with no

symptoms attributable to the head, innumerable variations have been found to exist, with the arterial circle of Willis showing the greatest number. Unfortunately, statistically speaking, the patients who were subjected to angiography and later to postmortem examination revealed few anomalies except aneurysm, thrombosis, and rupture. As a result of a great amount of investigation now being done in the field of intracranial vasculature, it may be safe to assume that so-called normal vascular aberrations of today may tomorrow be considered abnormalities.

Summary and conclusions

At present, cerebral angiography offers one of the best means of intracranial diagnosis. It has rapidly developed in the last decade to a point of universal acceptance. We at Philadelphia College of Osteopathy have utilized it as our first choice in intracranial contrast diagnostic studies, having felt from its inception that this technic would supply information not forthcoming from either air studies or standard skull examination. This position has been justified many times by the exposure of vascular lesions not indicated by other studies. Such reasoning is important in the light of present-day emphasis on diagnosis and treatment of cerebrovascular lesions.

The procedure, although relatively simple, necessitates good cooperation between radiologist and neurosurgeon, for both administration and interpretation. Radiographic findings should be interpreted in the light of clinical manifestations. The opaque solution used in our cases has been Diodrast, 35 per cent, and Urokon, 30 per cent, given either percutaneously or by exposure of the carotid artery. There are advantages and disadvantages to both procedures.

The patient's physical status has not been a major factor in the decision to use cerebral angiography. Comatose, semicomatose, and irrational as well as cooperative patients have been subjected to this technic. Age is probably not a factor in its utilization, although we have arbitrarily limited our usage to patients under 67 years old. The youngest patient in our series was 2 years old. Angiography may be performed bilaterally or unilaterally, as the case demands. The indications for angiography are multiple, and are not relegated to intravascular lesions alone.

One of the greatest reasons for enthusiastic reception of cerebral angiography is its ability to delineate multiple lesions and thus avoid needless surgery. The technic also shows small lesions early, improving the chances of definitive surgery.

Where anesthesia can be tolerated, general anesthesia with Pentothal sodium has been used. We feel that this offers protection to the patient and has assured good results.

In our hands, cerebral angiography has produced no deaths, no complications, and no untoward effects.

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References

1. Dandy, W. E.: Röentgenography of brain after injection of air into spinal canal. Ann. Surg. 70:397-403, Oct. 1919.
2. Dandy, W. E.: Ventriculography following injection of air into cerebral ventricles. Ann. Surg. 68:5-11, July 1918.
3. Egas Moniz, A.: L'encéphalographie artérielle, son importance dans la localisation des tumeurs cérébrales. Rev. neurol. 2:72-90, July 7, 1927.
4. Sugar, O.: Cerebral angiography in diagnosis of intracranial lesions. S. Clin. North America 34:1051-1062, Aug. 1954.
5. Dunsmore, R. H., Scoville, W. B., and Whitcomb, B. B.: Symposium: intracranial vascular abnormalities; complications of cerebral angiography. J. Neurosurg. 8:110-118, Jan. 1951.
6. Abbott, K. H., Gay, J. R., and Goodall, R. J.: Clinical complications of cerebral angiography. J. Neurosurg. 9:258-274, May 1952.
7. Sutherland, D. L., *et al.*: Note on use of 25 per cent Iodopyracet (Diodrast) in cerebral angiography. J. Neurosurg. 12:223-225, May 1955.

Intestinal INTUBATION:

Practical considerations*

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Introduction

IT HAS BEEN SAID that good judgment is based upon experience, and that experience is the result of poor judgment. There are few situations in the practice of surgery more suited to the sentiments of this aphorism than the management of a patient with intestinal obstruction.

The "intubation era" in the treatment of intestinal obstruction was born in 1934, when Miller and Abbott[1] introduced a long intestinal tube for studying the physiology of the intestine. By 1938 papers describing their tube, or modifications of it, in the treatment of intestinal obstruction began to appear in the literature.[2] As is true of all new concepts in medicine, intestinal intubation was severely abused as a form of treatment, with the inevitable result that it fell into disrepute. As the years passed, our knowledge of the pathologic physiology of intestinal obstruction and the delicate intricacies of fluid and electrolyte balance was gradually expanded. The mistakes of former years became apparent, and the place of the long intestinal tube in the treatment of intestinal disease became well established. Today it is part of our standard armamentarium in the treatment of intestinal obstruction. Indeed, a surgeon of today would be subject to criticism if he did not employ this valuable adjunct in his management of intestinal obstruction.

Because of the universal acceptance and use of intestinal intubation in the management of ileus, any further remarks on the subject might well be considered somewhat superfluous. The fact remains, however, that too many patients are allowed to progress to

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precarious levels because of unwarranted procrastination and valuable time lost in clumsy attempts to pass a tube into the intestine. An intestinal tube can be a life-saving measure if judiciously employed. It can also kill the patient if it is indiscriminately used, if it is neglected, or if it is used as a substitute for operation in mechanical obstructions. It is easy to fall victim to the temptation of deferring operation in mechanical obstruction in the futile hope that the patient will "get better" with a tube. If intubation is required in a particular case, the doctor must apply his knowledge of the pathologic physiology of intestinal obstruction to each case under consideration, carefully evaluating it as to cause or type, selecting an intestinal tube that will restore intestinal normality as quickly as possible, and knowing the safe limitations of dependence upon such a tube. This responsibility cannot be delegated to the lowest member of the house staff or to the nursing staff for any logical reason, unless all such personnel are forcefully impressed with the seriousness of this problem and are thoroughly trained and skilled in the technical problems associated with the passage and care of intestinal tubes. These decisions are the duty of every responsible surgeon and cannot be neglected.

It is the purpose of this paper, therefore, to demonstrate that successful intubation of the intestine is dependent upon (1) a knowledge of the type of obstruction, (2) a knowledge of the pathologic physiology of intestinal obstruction, (3) familiarity with various types of intestinal tubes available and the principles upon which they were designed to function, (4) an awareness of the anatomic peculiarities of the upper gastrointestinal tract, (5) a reasonable degree of skill, and (6) a great deal of gentleness, consideration, and old-fashioned common sense. It is not within the scope of this paper to discuss the operative treatment of intestinal obstruction nor to consider the problems of fluid and electrolyte balance associated with all types of intestinal obstruction. Much of the material which will be discussed stems directly from Cantor's[3] excellent treatise on this subject and its attendant problems, and no attempt will be made to cite each and every reference to this work.

Indications for intubation

The use of intestinal intubation in the management of intestinal obstruction is possible because of the physiologic response of the intestine to its luminal contents. It is the application of sound physiologic principles for the restoration of normal function to a bowel which has had its function disturbed by *distention.*[4]

There is wide variance in the causes and degrees of ileus which surgeons must manage in the course of practice. It is of utmost importance to know the type of obstruction with which one is dealing, for *without exception* all mechanical or dynamic obstructions require surgical intervention. The role of the intestinal tube lies in the treatment of paralytic or adynamic ileus, and in the control of preoperative and/or postoperative distention in mechanical obstructions. Intubation is *not* a substitute for operation in dynamic obstructions.

The most common type of distention seen is that which follows abdominal operations. This is due to air which is swallowed or forced past a relaxed glottis into the stomach by pressure or squeezing of the rebreathing bag by the anesthesiologist, or by the handling of the intestine and the intra-abdominal packing and retraction incident to the procedure performed. This type of distention is of little consequence and is due entirely to gas within the stomach and intestine. It is seen most commonly following inhalation anesthesia. With return of peristalsis following operation, this air is largely eliminated by eructation and passage of flatus. Gentleness in operative technic; minimal retraction, packing, and handling of the intestine; and early ambulation will largely eliminate this problem. (By early ambulation I mean having the patient on his feet and walking within 8 to 12 hours after surgery.) This type of distention can be quickly relieved by ambulation and soft-tissue manipulative treatment to the lower thoracic and the lumbar areas of the spine and, if necessary, by nasogastric suction which is applied through a Levin tube. This is the only type of distention which is amenable to correction by a gastric tube, since there is adequate peristalsis, the distending medium consists of entirely of gas, and there is no adherence or edema of the bowel loops.

Another common type of adynamic ileus is that associated with diseases outside the digestive tract. Paralytic ileus is often seen in association with pneumonia, calculous or inflammatory disease of the upper urinary tract, retroperitoneal tumors or abscesses, spinal injuries, and occasionally from overdosage or hypersensitivity to autonomic ganglionic blocking agents. In this type of distention, treatment by the long intestinal tube produces quick and dramatic relief, and if the intubation is performed early in the course of the disease, all the undesirable sequelae of prolonged intestinal distention can be prevented.

The largest group of obstructions, and probably the most difficult to manage, is that resulting from acute inflammatory lesions of the abdomen and pelvis such as acute appendicitis with rupture, pelvic inflammatory disease, pancreatic necrosis, or perforated peptic ulcer. In this type of case, rapid and effective decompression is of utmost importance if one is to avoid the deleterious effects of intestinal distention in addition to injury from a serious primary disease process. Furthermore, prolonged intestinal atony in the presence of the fibrinous exudate of peritonitis is likely to result in the adherence of loops of bowel to each other or to an inflammatory mass such as an inflamed colonic diverticulum, a tubo-ovarian abscess, or a vaginal cuff abscess following hysterectomy. While the disease which initiates the distention may or may not require immediate operation, it is of the greatest importance to effect decompression as quickly as possible. This will reduce or eliminate extensive adhesive processes, control the vomiting and pain, and allow for correction of fluid and electrolyte losses so the patient may be properly prepared for any operative procedure that may become necessary. The difficulty posed in this type of case is that although the initial distention may be of the reflex adynamic type, a mechanical obstruction may supervene so insidiously as to escape detection unless this possibility is constantly kept in mind. It is extremely easy to be led into an attitude of complacency by the relief afforded by the tube from distention and its accompanying symptoms. While the treatment of paralytic ileus is by intubation alone, the treatment of the underlying cause may be surgical, and the treatment of any complicating mechanical obstruction demands operation.

All other obstructions are those of a mechanical or dynamic nature caused by intrinsic or extrinsic bowel lesions, postoperative stenosing bands, strangulation, or thrombosis with infarction. The only defini-

tive treatment in such cases is surgical intervention. The only purpose of an intestinal tube in these cases should be (1) to achieve rapid decompression of the bowel and thus prevent the serious effects of prolonged intestinal distention, (2) to deflate the bowel so that the operation will be made safer for the patient and technically easier for the surgeon, (3) to control the vomiting so that fluid and electrolyte losses can be controlled and corrected before and after operation, and (4) to avoid or control postoperative distention. The latter is of particular importance if intestinal resection is necessary, in that dangerous stresses and possible leakage at the anastomotic line will be avoided.

In large bowel lesions which require surgical treatment, an intestinal tube is used only to relieve any small bowel distention which may exist proximal to the obstruction in the colon, and to relieve or prevent any postoperative distention from stomal edema or paralytic ileus. Quite often such patients are admitted with long-standing distention, dehydration, anemia, and hypoproteinemia. Here the passage of a tube will afford relief from the distention and allow for correction of the depleted fluid, electrolyte, and nutritional factors while diagnostic studies are being undertaken for evaluation of the case.

Occasionally, the exact cause or site of an obstruction may be difficult to determine. If perforation of the gastrointestinal tract can be safely ruled out, the long intestinal tube may be utilized for the instillation of a thin mixture of barium as an aid to diagnosis. This procedure is not without hazard, but in selected cases it may reveal not only the site of obstruction, but the cause as well, such as an unsuspected foreign body. It may prevent an otherwise poorly chosen incision or needless prolonged handling of the bowel in tedious search for the site and cause of obstruction. The barium can usually be removed by a suction unit prior to operation, and if the cases are carefully selected this is a worth-while procedure.

TABLE I—TYPES OF OBSTRUCTION AND INDICATED TREATMENT

Type	Cause	Treatment
Adynamic	Postoperative ileus, extraperitoneal disease (chest, urinary tract, spinal cord, effects of drugs)	Decompression with intestinal tube
Dynamic	Herniae, volvulus, strangulation, neoplasm, thrombosis, stenosing bands	Definitive surgery (intestinal tube is only an adjunct to operation)
Mixed	Inflammatory disease of the abdomen or pelvis, trauma	Intubation alone *may* suffice; dynamic obstruction may supervene or coexist

Pathologic physiology of obstruction

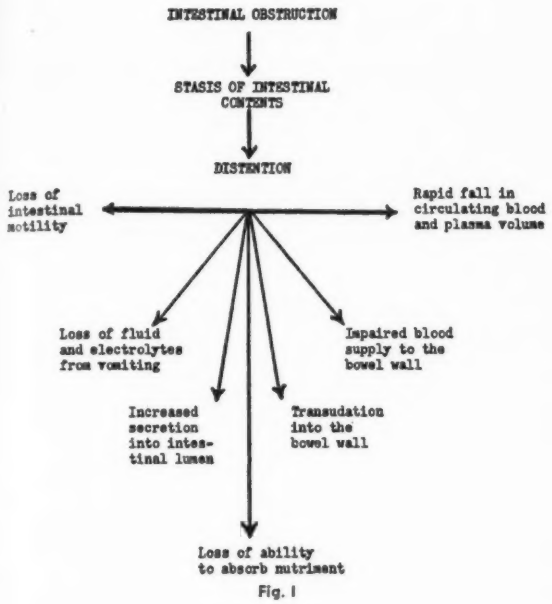
Intestinal obstruction implies any disturbance which interferes with the normal forward progress of the intestinal contents. A concept not generally appreciated is that obstruction does not only mean a mechanical or lumen-plugging lesion. When obstruction occurs, the first or immediate result is intestinal stasis. The inevitable result of intestinal stasis is a progressive distention of the intestine proximal to the obstruction. This distention, once it has begun and is not relieved, leads to involvement of more and more segments above the obstruction until the entire extent of bowel is involved. The result is a greatly dilated intestine filled with fluid and gas, in which peristalsis is weak or entirely absent.[4] This also applies to mechanical obstructions, for peristalsis will eventually cease if the obstruction is unrelieved, although by the time this happens the patient is practically moribund. I would like to emphasize that *distention* is the factor which initiates all the troublesome problems facing the surgeon, and this begins when the normal progress of intestinal contents is impeded from any cause.

It is generally accepted that most of the gas in the bowel is due to swallowed air. When intestinal stasis occurs, the volume of gas is markedly increased by decomposition and fermentation of the intestinal contents and displacement of gases from the capillary bed into the lumen of the bowel. The longer the obstruction persists, the more gas will accumulate. Unfortunately, relief of obstruction involves more than the removal of gas. It must be remembered that the lumen of the bowel also contains liquids of various types, derived from the saliva, gastric and intestinal juices, bile, pancreatic juice, and partially digested food. These elements constitute about 3,000 cc. of fluid per day normally emptied into the bowel, exclusive of any liquids ingested by the patient. As intestinal distention persists, more fluid is poured into the lumen, for it has been demonstrated that distention of the bowel is a powerful stimulus for the transudation of fluid from the tissue spaces into the intestinal lumen.[5,6] Moreover, it has been shown that intestinal distention increases the secretion of intestinal juices from 170 to 567 per cent.[7]

The volume of fluid which seeps into the intestinal lumen from the interstices is directly proportional to the degree and duration of the distention and circulatory embarrassment of the bowel. It is easy to conceive how increased intraluminal pressures will cause undesirable effects upon the circulation in the intestinal wall. The pressure in the lumen results in decreased blood flow through the capillaries of the bowel, with resultant tissue anoxia and increased capillary permeability. When the pressure of the distention approaches the diastolic blood pressure, serious injury to the bowel occurs. If this pressure approaches the systolic pressure of the blood, then death of the tissue will occur.

It should be clear from the foregoing statements that intestinal obstruction initiates a vicious circle of events. Obstruction leads to stasis of the intestinal contents, with progressive distention of the bowel with fluid and gas. As the distention increases, the circulation to the bowel is compromised with resultant tissue anoxia and edema. As the anoxia and distention persist, more fluids and plasma escape into the lumen because of capillary damage. This increases the pressure in the lumen still more, with more transfer of fluids into the lumen, retention of carbon dioxide, and excretion of sodium. Ultimately, loss of intracellular water will take place, followed by death.[4]

Since the distending elements in the intestine consist of both water and gas, the laws pertaining to equalization of pressure of a given substance do not entirely apply in this situation. Furthermore, these


INTESTINAL OBSTRUCTION
STASIS OF INTESTINAL CONTENTS
DISTENTION
Loss of intestinal motility
Rapid fall in circulating blood and plasma volume
Loss of fluid and electrolytes from vomiting
Impaired blood supply to the bowel wall
Increased secretion into intestinal lumen
Transudation into the bowel wall
Loss of ability to absorb nutriment
Fig. 1

substances are present in dilated loops of bowel which are lying in every conceivable plane and are distorted and angulated by the weight of the fluid within the bowel as well as by the weight of the edematous bowel itself. In effect, the fluid content of the intestine is lying in multiple small puddles. This should make it easy to see why, when both gas and fluid must be removed, negative pressure applied to one end of the intestine will not effectively decompress the entire length of bowel.

A gastric tube does offer relief when distention is due solely to gas and there is effective peristalsis. This is possible only because of the periodic relaxation of the pylorus which permits intestinal gases to enter the stomach. The only way a gastric tube can decompress a bowel distended with gas and fluid is by virtue of such a high intraluminal pressure that when the pylorus opens there is a reflux of some of this fluid back into the stomach to reach the tube. By the time this degree of distention occurs, the circulation and viability of the bowel have been seriously jeopardized, and the cycle of events previously described has progressed to the point of danger. Moreover, since the ileocecal valve effectively prevents the reflux of colonic contents into the ileum, nasogastric suction for relief of colonic distention is useless. This concept must be understood, to realize that a gastric or gastroduodenal tube will never effectively decompress the bowel in intestinal obstruction. This fact bears emphasis, for a surprising number of surgeons still employ nasogastric suction as a therapeutic measure in intestinal obstruction.

Anatomic factors in intubation

The patient unfortunate enough to require intubation will be the first to concede that, while the nasal passages are well designed for respiration, they are poorly suited for the passage of a tube. Nevertheless, most tubes are passed through the nose because this causes less discomfort than when passed through the mouth. Enlarged turbinates, septal deviations, nasal polyps, and other abnormalities of the nasal airway may cause considerable difficulty in passing a tube through the nose. The majority of such obstacles can be overcome by shrinking the nasal mucosa with a topical vasoconstricting agent. By this simple procedure an otherwise impassable airway will accommodate a tube with surprising ease. Gentleness in passing the tube through the nose is of utmost importance. The tube should never be forced, for if the patient is hurt by rough and clumsy manipulations of the intubator, he will become frightened and uncooperative. The effect of the emotions upon gastrointestinal motility and sphincteric activity is well known,[8] and anything that upsets or hurts the patient will hamper successful intubation. Fear and apprehension may cause enough cardiospasm to prevent the tube from entering the stomach or enough pylorospasm to prevent the tube from passing through the pylorus. If the patient is given small sips of water he will easily swallow the tube if it is gently fed, not forced or pushed, into the nose as he swallows each sip. Once the tube passes the pharynx, usually little difficulty is encountered, and the tube readily passes into the stomach.

Cantor[9] says that the stomach presents the greatest trap in intestinal intubation, for the problem is to get the tip of the tube past the pylorus and into the duodenum. A large portion of this difficulty will be eliminated if certain anatomic and physiologic factors concerning the stomach are kept in mind. The first of these is the position and configuration of the stomach and the degree of gastric distention. Most patients with intestinal obstruction present a distended stomach with diminished motility and often with reversed flow of stomach contents. With the patient supine, the fundus becomes the most dependent part of the stomach. Thus, when a tube, and particularly a weighted one, is passed into the stomach, the tip of the tube will coil up in the fundus, which lies to the left of and posterior to the anterior surface of the spine in the left paravertebral gutter. It is therefore necessary to have the patient elevated on a back rest or sitting up when the tube is passed into the stomach. The next problem is to get the tip of the tube heading toward the pylorus; at this point knowledge of the configuration of the stomach is of great value. If the patient has had previous gastric x-ray studies and the films are available, the size, shape, and position of the stomach should be studied. The survey or scout films of the abdomen usually taken to confirm the diagnosis of intestinal obstruction will often reveal enough of the stomach outline to aid in determining its configuration. The pylorus will usually be found at a higher level than the stomach, and the distended stomach rotates so that the greater curvature turns anteriorly. These factors can be utilized to point the tube toward the pylorus by turning the patient on his right side and slightly on his face. Now by elevating the foot of the bed slightly, the tube should point upward along the long axis of the first portion of duodenum. If a gastroenterostomy is present, then the patient should sit up or stand, since the stoma lies at the greater curvature and will therefore be at the most dependent part of the stomach in that position. The tip of the tube will readily fall toward that point.

Once the tip of a tube of the inflatable balloon passes through the pylorus, the balloon is inflated with air, and peristalsis should propel the tube along the intestinal tract. If a weighted tube is used, the position of the patient should be changed to take advantage of the vertical axis of the second portion of the duodenum. The patient should therefore be turned on his back, the foot of the bed lowered, and the head of the

bed raised. This will allow the heavy end of the tube to fall downward along the axis of the mid-portion of the duodenal loop. Since the last portion of duodenum runs almost transversely from right to left, turning the patient on his left side at right angle to the bed will cause the tip of the tube in the second portion of duodenum to fall toward the left, along the long axis of this last portion of duodenum.

When the tube has traversed the entire duodenum, it reaches the duodenojejunal flexure, the last anatomic obstacle in intubation. The ligament of Treitz is a bundle of involuntary muscle fibers extending from the duodenojejunal angle upward to the left pillar of the diaphragm, which keeps the last portion of duodenum at a fixed point[10] and prevents this flexure from being weighted down by a filled proximal jejunal loop. When this jejunal loop is weighted down still further because of a large fluid content and edema of its wall incident to obstruction of long standing, the added weight may be sufficient to cause a marked angulation at this flexure and present a distinct barrier to intubation. An intestinal tube may remain lodged at this point for many hours. Cantor[3] has made a detailed study of this "ligament" as related to intestinal intubation, stating that it varies from ½ to 2½ inches in length. The shorter the ligament the greater the upward course of the last portion of duodenum and the more acute the angle at the duodenojejunal flexure. If difficulty is encountered in getting the tube past this point, some of the air should be removed from the inflated balloons. The use of mercury in the end of the tube plus free ambulation of the patient, if possible, will usually overcome this obstacle.

The next problem in order is to get the tube to pass through the intestinal tract for the desired distance. It should be borne in mind that the small intestine is essentially a mobile tube about 22 feet long, but it is suspended by a mesentery only 6 inches long, which is attached to the posterior abdomen obliquely downward from left to right. Because of this, the small bowel lies in multiple short loops which lie in a transverse plane. When the bowel is distended with gas and fluid, and peristalsis is diminished or absent, gas and fluid become pocketed in these loops. It is essential, then, that an intestinal tube travel the entire length of involved bowel to effectively achieve decompression. Since these loops lie transversely, frequent ambulation and side-to-side motion of the patient will help the tube to pass through the intestine. This is particularly true with weighted tubes. As the tube travels through the intestine, the pockets of fluid and gas are eliminated, because the bowel becomes pleated over the tube in an accordion-like manner. This can easily be seen at operation when a tube has been passed into a long length of bowel, since 22 feet of small bowel can be strung over 6 or 7 feet of tubing. This fact can be utilized to advantage when operating for bowel obstruction, by diminishing the amount of space occupied by the bowel, facilitating packing of the intestine out of the field of operation.

Types of intestinal tubes

There are two general types of intestinal tubes in common use in this country: the air-filled balloon type, and the mercury-weighted balloon type. As previously stated, a knowledge of the various tubes available and the principles upon which each is designed is essential for the proper selection of the tube which will most rapidly and effectively achieve the desired result in a given case. I will therefore describe the most commonly used tubes somewhat in detail.

Air-Filled Balloon Tubes.—These tubes are based upon the principle that an air-filled balloon in the lumen of the intestine will stimulate peristalsis, propelling the tube along the intestinal tract.[11] In order for this distended balloon to initiate peristaltic activity, the bowel immediately ahead of the balloon must be decompressed so that its walls will come in direct contact with the balloon.[4] Once the tip of the tube has passed the pylorus, the balloon is inflated with air. The distended balloon stimulates peristalsis which carries the tube along the bowel. The most widely used tubes of this type are the Miller-Abbott, the Johnston, and the Honor-Smathers tube. These three tubes have several things in common: (1) an inflatable balloon at the head (advancing) end of the tube; (2) a double lumen, one for decompressing the bowel and one for inflating the balloon; (3) calibration in centimeters; and (4) radiopacity. This is where the similarity ends, however, for in other respects they differ markedly.

The Miller-Abbott tube consists of a single sheath enclosing two lumina of approximately the same size. Since the tube is usually a 16 F, each lumen is roughly 8 F in size. At the head end of the balloon is a small metal tip which projects about ¼ inch ahead of the balloon and which contains numerous small perforations leading to the suction lumen. Proximal to the balloon, arranged in a straight line along one side of the tube, are six small round holes which also lead to the suction lumen, covering a distance of about 4 inches just proximal to the balloon. The other end of the tube is fitted with a forked or "Y" metal tip. One side of this tip is labeled "Suction," and the other side usually bears the name of the manufacturer. The tube is of soft rubber, and the balloon is of latex.

The Johnston tube is also of rubber, but has a soft rubber balloon which has replaced the original latex balloon.[12] The end of the tube projects some 4 inches beyond the balloon and is tipped with a large metal piece with several large rectangular openings leading to the suction lumen. The holes in the tube are quite sizable, oval in shape, and so placed as to cover a considerable percentage of the circumference of the tube. The tube is size 18 F, with a large suction lumen and a separate small tube cemented along the length of the suction tube leading to the balloon, making it difficult to confuse the purpose of the two openings at the proximal end of the tube.

The Honor-Smathers tube is a plastic tube and is much the same as the Miller-Abbott tube in design. However, the suction lumen is much larger while the lumen for inflation of the balloon is very small, running within the wall of the suction tube along one side. Also, there is no tube projecting ahead of the balloon; instead the balloon hangs free from the end of the tube.

Weighted Balloon Tubes.—These tubes are designed to take advantage of the free-flowing nature of a liquid heavy metal such as mercury. These tubes progress through the intestine by the sheer weight of the mercury and its response to gravity. The two most widely used tubes of this type are the Harris and the Cantor tubes.

The Harris tube is an outgrowth of the work of Harris, who found that by instilling mercury into the balloon of a Miller-Abbott tube it was easier to get the tip of the tube through the pylorus.[13,14] This is a single-lumen rubber tube with a long latex balloon which surrounds the distal 4 inches of the shaft and is tied to it after filling the balloon with a quantity of

mercury. It is also marketed in plastic as the Kaslow intestinal tube, and this is the type which we have employed. Projecting ahead of the balloon in the Kaslow tube is a small loop of flexible plastic tubing with two tiny oval slits for suction. There are six perforations arranged alternately on opposite sides of the tube, extending back about 6 inches from the top of the balloon. The tube is radiopaque, size 16 F, and its upper end is transparent to allow visualization of the aspirated material.

The Cantor tube is a size 18 F single-lumen soft rubber tube tipped with a neoprene balloon, which is attached so as to hang freely from the very tip of the tube. There are two sets of large oval holes proximal to the balloon. The sets are 4 inches apart and there are four holes 1 inch apart in each set. The holes are so arranged diagonally along the tube as to cover the entire circumference of the tube.

Advantages and Disadvantages of Various Types of Tubes.—The Miller-Abbott tube, although the first to be widely used and still the most commonly employed tube today, probably has more disadvantages than other tubes. Since this tube was originally devised to study intestinal physiology and not for intestinal decompression, the suction lumen is very small. This lumen becomes plugged very easily, and since it is so small, any kinks or coils in the tube can easily obstruct both the suction lumen and the lumen leading to the balloon. The holes in the metal tip ahead of the balloon are so tiny as to permit occlusion by particulate matter from the intestine. This metal tip is placed so close to the balloon that the balloon projects beyond the tip and partially occludes it, so that there is little decompression of the bowel ahead of the balloon.

The holes proximal to the balloon are small and round and easily plugged. They extend upward for a distance of only 4 inches from the balloon, and they are all in a direct line, so that it is easy for all of them to become blocked at one time and thus stop all decompression. There are no holes further up the tube to allow for decompression of short loops proximal to the head end of the tube. Should gastric dilatation occur with the Miller-Abbott tube in use, it is necessary to pass a gastric tube through the opposite nostril to decompress the stomach, an undesirable procedure. With the Johnston, Harris, and Cantor tubes, 2 to 4 holes can be cut in the large suction lumen and then 16 to 18 inches of tubing advanced into the stomach to obtain simultaneous gastric decompression. This cannot be done with the small lumen of the Miller-Abbott tube, and, further, there is no way of determining the location of the septum dividing the suction and balloon lumina of the tube. The forked adapter at the proximal end of the tube is so designed and labeled as to invite serious complications as a result of carelessness. This tube requires constant care and attention to avoid annoying and potentially serious difficulties. It would appear from the foregoing comments that I am not enthusiastic about this tube, and that is so.

The Johnston tube has a much larger suction lumen. The holes are much larger, more logically arranged around the circumference of the tube, and oval in shape, and thus less likely to become plugged than round holes. The tip of the tube projects 3 or 4 inches ahead of the balloon and has several large openings both in the tube and in the metal tip attached to it. This precludes easy obstruction and allows rapid and effective decompression ahead of the balloon. There is little danger of confusing the two ends at the proximal tip of the tube, for they are not attached to each other, as in the Miller-Abbott tube, and are quite different in size and appearance. The large diameter of the tube and particularly of the metal tip may make passage of this tube difficult and traumatic in certain cases. Recently, however, the manufacturers of this tube have begun to offer a small (¼ inch) metal Rehfuss tip to replace the large tip originally supplied with the tube, so that this undesirable feature can be eliminated.[15]

Our experience with the Honor-Smathers tube has been so limited as to prevent any conclusions therefrom. This tube is somewhat of a hybrid, for it uses mercury as a weight in an air-filled balloon which is utilized for propulsion. However, there is no mechanism for decompressing the bowel ahead of the distended balloon.

The Harris tube has an effective suction lumen and holes of adequate size and location. We have encountered no difficulty from sensitivity to the plastic material used in its manufacture. The only objection to this tube is that it does not allow full use of the free-flowing quality of mercury because the shaft of the tube runs through the balloon containing it. This short segment of tube is relatively rigid and the weight of the mercury is not sufficient to bend this segment of tube. In other words, the effective qualities of a free-flowing heavy liquid are partially defeated by having a rigid tube running through the receptacle containing the liquid. The two holes in the plastic loop which forms the head end of the tube are tiny and so placed on the inside of the loop as to make them virtually useless.

The Cantor tube utilizes a large suction lumen with large oval holes so spaced as to cover all the diameter of the tube, and arranged in two groups 4 inches apart. The mercury is held in a loose balloon attached to the end of the tube (there is no portion of the tube which runs through the balloon). The tube is marked in a way which avoids confusion. The first mark, "S" (stomach), is located 17 inches from the tip of the tube; the next, "P" (pylorus), 6 inches beyond "S"; and the next, "D" (duodenum), 6 inches beyond "P."

Roentgen examination as aid to intubation

The radiologist is an important contributor to the teamwork required for successful intubation. His services should be those of a skilled physician and not those of a technician. If a patient has had previous gastrointestinal x-ray studies, the radiologist should call to the attention of the surgeon any peculiarities of anatomy or motility that may relate to passage of the tube. He should be able to give an estimate of the degree or severity of distention, the approximate site of obstruction, the progress and location of the tube, information about overdistention of the balloon, and the condition of the intestinal tract prior to removal of the tube. In addition, he should be able to guide a tube through the pylorus in difficult cases without unnecessarily prolonged exposure under fluoroscopy and without trauma to the patient. All of these factors demand that the radiologist be as familiar with the problems of intestinal obstruction and intubation as the surgeon, and he must be willing to render these services without procrastination.

Technic of intubation

The actual technic of intubation will vary somewhat depending upon which tube is being used. We

employ the following routine prior to passage of any intestinal tube. The patient is given a sedative or opiate (Luminal or Demerol) 45 minutes before the tube is to be passed. Occasionally we may also administer atropine at the same time. The nasal passages are sprayed with an aqueous solution of 1 per cent ephedrine 15 minutes prior to passage of the tube, and this is repeated 5 minutes later. The nasal passages, the pharynx, and the palate are then anesthetized by several applications of 1 per cent Pontocaine applied with an atomizer, and at this time the patient is given 30 cc. of Xylocaine Viscous to swallow. This is a very palatable topical anesthetic agent which provides excellent pharyngeal and esophageal anesthesia, and helps prevent many undesirable sphincteric reflexes. Sufficient time is allowed to establish adequate anesthesia, usually about 5 minutes, before the tube is passed. We prefer to use Xylocaine Jelly for lubrication of the tube since this provides additional assurance that the intubation will be a painless procedure.

TABLE II—ROUTINE FOR LONG INTESTINAL TUBES

1. Give Phenobarbital sodium, 120 mg. intramuscularly, 45 minutes prior to passage of tube.
2. Give Demerol, 100 mg, intramuscularly, instead of Phenobarbital if pain is severe.
3. In severe vomiting, atropine, 0.4 mg. intramuscularly, with above drugs.
4. Spray nasal passages with 1% ephedrine in saline 15 minutes before tube is passed; repeat in 5 minutes.
5. Spray nasal passages, pharyngeal pillars, posterior pharyngeal wall, palate, and base of tongue with 1% Pontocaine 10 minutes before tube is passed; use 2 or 3 applications.
6. Have patient swallow 30 cc. of Xylocaine Viscous.
7. Use Xylocaine jelly for lubrication of the tube.
8. Do not chill or ice the tube.
9. After tube is inserted through the nose and reaches the nasopharynx, have patient swallow sips of water and gently advance tube until it reaches the stomach.
10. Once the tube is in the stomach, follow the routine for further advance of the tube for the particular tube being used.

We try to explain to each patient just what is going to be done and why it is necessary to pass the tube, in language that he will understand. We have found it helpful to show him the tube so he will be reassured that there is nothing about it that may hurt him and at the same time explain the entire procedure to him. We have not found it advantageous or desirable to chill the tubes in ice, as is done in many institutions. Indeed, the plastic tubes become so stiff when chilled that difficulty may be encountered in straightening them for passage.

Air-Filled Balloon Tubes.—The air is removed from the balloon and the tip of the tube is gently passed through the nose until it reaches the nasopharynx. The patient is given a glass of water and as he drinks the water the tube is gently guided into the naris so that it will be swallowed with each sip of water until the tip is in the stomach. The tube is not pushed or forced through the nose or down the esophagus. If the metal tip of the Johnston tube is too large to pass through the nose, the tip may be removed and the tube passed without it; when the tube is seen in the pharynx, the end is pulled out through the mouth, the metal tip is reapplied, and the tube is then swallowed as usual. However, with the smaller tip previously described and now available, this procedure should not be necessary. When the tube is in the stomach, the stomach contents are evacuated and the tube is connected to suction. The balloon is inflated with air and the tube is pulled up until it impinges on the cardia. The balloon is then deflated completely, the patient is placed on his right side, and the tube is advanced 6 inches. At this point one of several procedures aimed at getting the tube through the pylorus may be followed:

1. The tube should fall toward the pylorus if the stomach is inflated with air.[15] When the tip of the tube is at the pylorus, the stomach is deflated by aspirating the air.

2. With the patient on his right side, the tube is advanced 1 inch every 15 to 20 minutes with constant suction applied to the tube. When golden yellow bile appears in the drainage tube, the tube should be in the duodenum. At this point the balloon is inflated with 10 cc. of air and the tube is advanced 1 inch every 15 minutes for 1 hour, after which the balloon is inflated to contain 30 cc. of air.

3. The patient remains on his right side for 1 hour with suction to the tube. The tube is then advanced 4 inches and another hour is allowed to pass. At this time the balloon is inflated with 10 cc. of air. If the balloon fills easily and without tension, it signifies that the tube is still in the stomach. If it fills with tension (if the plunger slides back when released), it signifies that the tube is in the duodenum.

4. Before the tube is passed into the stomach the balloon is inflated to a diameter of 2 inches and the amount of air required to do this is recorded. The balloon is deflated and the tube is passed in the usual manner. With the tube in the stomach the balloon is inflated to 2 inches with the amount of air previously noted, and the pressure in the balloon is measured with a manometer and recorded. The balloon is deflated and the tube is advanced in the manner desired. At intervals of 30 minutes the balloon is reinflated with the measured amount of air and the pressure is noted. When the pressure in the balloon reaches twice that recorded in the stomach, the tube is in the duodenum.[16]

5. The stomach is inflated with water and the patient is turned on his left side. The balloon is inflated with air and floats to the top of the water level, where it will be floated toward the pylorus as the water drains into the duodenum. After a short interval the tip should be at the pylorus and the stomach and balloon are deflated. The patient is turned on his right side and the tube is advanced as desired.

6. The balloon may be filled with 4 to 6 cc. of mercury or 10 cc. of water, to act as a weight in bringing the tip toward the pylorus.

7. A wire stylet is introduced 4 feet from the tip of the tube and advanced to within 6 inches of the end of the tube. The stylet may be used to guide the tip of the tube through the pylorus under fluoroscopic observation, after which the stylet is removed.[17]

8. A magnetized tip may be placed on the end of the tube before it is passed into the stomach. With the tube in the stomach the tip is guided through the pylorus by fluoroscopy, using a very powerful magnet applied to the right flank and belly wall.[18]

Mercury-Weighted Balloon Tubes.—The Harris tube requires that the balloon be filled with mercury

before the tube is passed through the nose. Usually 2 to 6 cc. of mercury are placed in the open balloon and the top of the balloon is tied around the shaft at the point designated on the tube by a wide black band. The excess balloon is trimmed away and the tube is passed into the nose. With this tube the balloon is quite long and is supported by the shaft running through it, so that it can easily be passed into the nose. However, it is best to grasp the end of the tube with the thumb and forefingers and "milk" the mercury to the back part of the balloon. With the head hyperextended, the tube and balloon are introduced into the nose until the fingers holding back the mercury touch the external nares. The mercury is then released to flow down to the tip of the tube, and by its weight it will carry the tube into the nasopharynx. The tube is then swallowed in the usual manner, having the patient drink water. The patient is then placed on his right side and the tube is slowly advanced to the 3-foot mark. No suction is applied to the tube during this interval. After 1 hour suction is applied to the tube, and when yellow bile appears in the clear upper portion of the tube, the tube should be in the duodenum. After this, the tube is advanced 2 inches every hour.

The Cantor tube also requires that the mercury be placed in the balloon before the tube is passed, in the manner described below. Using a 21 gauge needle, one side of the balloon is punctured at its midpoint. From 4 to 8 cc. of mercury are instilled into the balloon with a syringe through the needle. The tube is then held up so the mercury falls to the bottom of the balloon; all the air is then aspirated from the balloon and the needle is withdrawn. The needle must be of 21 gauge, and the puncture must be at the midportion of the balloon. This will provide a hole of proper size and location to allow escape of gases within the balloon without allowing the mercury to leak out. A silk tie is placed securely around the part of the balloon cemented to the tip of the tube as an added precaution against its being pulled off. With the patient sitting up or in the semi-Fowler position and the neck hyperextended, the mercury is held back in the balloon as described above and the balloon is introduced into the nose. The mercury is then released, and the tube will be carried to the nasopharynx by the weight of the mercury. If a narrow area is encountered in the nose, the balloon may be gently nudged past the obstruction with a cotton-tipped applicator until the mercury pulls the rest of the balloon past this constricted part of the nasal passage. The patient then is asked to swallow water and the tube will usually plummet down into the stomach, ordinarily bringing the "S" mark to the nose.

The tube is now connected to suction, and the patient is turned on his right side and slightly on his face with the foot of the bed elevated 12 to 15 inches. By having the patient swallow water, the tube is gently guided through the nose and advanced until the "P" mark is at the external nares. This position is maintained for 2 hours. The patient is then turned on his back, the foot of the bed lowered, and the head elevated 12 to 15 inches. This position is maintained for 2 hours, during which time the tube is advanced slowly until the "D" mark is at the nose. At the end of 2 hours the head of the bed is lowered and the patient is placed on his left side, perpendicular to the bed and without a pillow, and kept so for another 2 hours. At the end of this 6-hour period, a film of the abdomen is made to confirm the location of the tube, which will almost invariably be found either in the distal limb of the duodenum or well into the jejunum. After this the patient should be encouraged to ambulate freely to tolerance. If this is not possible, he should be turned at hourly intervals.

The 2-hour intervals mentioned above are not always necessary, for many times the tube will advance very quickly. However, Cantor advocates them as a means of establishing a definite routine, and we have found this advantageous in the training of the house staff and nursing personnel. The tube should *not* be taped to the face or otherwise restricted during the intubation period. The amount of mercury used in the bag is variable, but 6 cc. is usually sufficient. This can be increased to as much as 10 cc. to overcome spasm or stricture of the esophagus, the cardia, or the pylorus, or if it is desirable to have the tube progress more rapidly through the intestine. If gastric motility is so diminished that the tube is slow to reach and pass the pylorus, Cantor suggests having the patient drink ice-cold physiologic saline solution.[10] This will stimulate active peristalsis and carry the tube through the pylorus.

Problems, hazards, and complications in intubation

It is interesting to note that all surgeons experience some degree of failure with any type of tube. The surgeons who have developed the tubes described, however, report an extremely high percentage of success with their own tubes, which of course is the result of their intense and continuous interest in the problem. There are, however, certain problems and hazards related to the passage of a long tube into the intestinal tract which may greatly increase morbidity and even result in death of the patient.

It is not uncommon for the surgeon to order an intestinal tube passed immediately after an operation in which he has a reasonable suspicion that intestinal obstruction is likely to develop. In such cases it is important to remember that the stomach is almost completely atonic for 6 to 8 hours after abdominal surgery.[19] If the tube is passed immediately after surgery it should be passed into the stomach only and allowed to remain for 6 hours on suction. This will keep the stomach empty and help restore its motility. After a 6-hour period intubation can proceed as usual. Oxygen inhalation stimulates peristaltic activity,[20] and this fact can be used in helping to restore intestinal motility after inhalation anesthesia.

At times, immediate operation may be required so there is insufficient time for intubation prior to surgery. In such cases the tube may be passed into the stomach before operating and the surgeon may attempt manual guiding of the tube through the pylorus during operation. The intestinal tract, however, may be so distended as to make this extremely difficult, and render the operative procedure unduly hazardous or technically difficult. In such cases decompression of the bowel is imperative. Nolan and Finley[21] pass a heavily weighted tube into the stomach from above and advance it by having the anesthesiologist tilt the table in all directions. This would seem to be both dangerous and time-consuming. Smith[22] employs a plastic double-lumen tube fitted with a stylet which is controlled by a lever on a handle on its proximal end. The anesthesiologist manipulates the handle and stylet as the tube is advanced under direct guidance of the surgeon. May and Norman[23] place a Foley balloon catheter in one of the distended loops through a stab wound in the bowel and secure it with a purse-string suture. They then

draw the bowel over the catheter "much as one would thread a sock on a darner." In this way they have been able to thread the entire small bowel over the catheter, by advancing it first in one direction and then the other. We have used direct trocar decompression of the distended bowel in such cases, in a manner similar to that described by Barnes.[24]

In children, intubation is, fortunately, usually much easier and more rapidly effected. The child-sized Miller-Abbott tube (12 F) is much too small in the sense that only half of this tube is used for suction decompression (in effect, a size 6 F tube). The intestinal contents of children are just as apt to plug a tube as those of adults, and therefore this tube requires meticulous and tedious attention. The Cantor tube is much better suited for use in children. It has no rigid parts to cause pain or injure delicate tissues, and it lends itself to rapid passage through the intestine because of the activity of children, even when ill and confined to bed.

Before any tube is used it should be carefully examined to be sure it is patent and that the balloon does not leak and can be decompressed with a syringe. Johnston[15] has had a case in which, due to a defect in the tube leading to the balloon, air could be injected but not removed. By the time several attempts were made to "unplug" the tube by forcing air into the balloon, the balloon became so distended it required operation to solve the problem.[28] He also cites a case in which such an overdistended balloon was deflated by puncturing it with a needle. As soon as the needle entered the balloon the tense rubber tore, causing a sudden escape of the supported air and rupture of the bowel.

All connections should be checked to be sure that they are properly attached. On the Miller-Abbott tube it is very easy to reverse the position of the forked metal adapter on the proximal end of the tube. If this happens, air will be injected into the bowel instead of the balloon, and the tube will not advance because the balloon is not inflated. Likewise, fluids injected to irrigate the tube will be injected into the balloon and it will become distended with water. I have seen a case in which a private-duty nurse religiously "irrigated" such a tube every 2 hours. The patient was not improving as expected and the tube failed to progress. An x-ray film of the abdomen revealed a dilated balloon which could not be deflated with a syringe because of multiple kinks in the tube. At operation, the balloon measured 4 inches in diameter and contained 450 cc. of fluid. It had produced a complete obstruction of the bowel with gangrene in the dilated segment, which was resected.

If a tube is passed too rapidly it will coil in the stomach and may result in knot formation. If this occurs with a double-lumen tube, the knot will stop effective suction of the intestinal contents since all of the holes are in the distal few inches of the tube. The knot may be so tight as to prevent deflation of the balloon and may thus make removal of the tube hazardous or impossible. A knotted tube can usually be pulled up until the knot is visible in the pharynx, where it can be cut free and removed through the mouth. If this cannot be done, then surgical intervention is required.

If an air-filled balloon tube is used successfully for decompression and the patient subsequently develops bowel distention with the tube on constant suction, then knot formation, overdistention of the balloon with air or fluid, or obstruction of the tube from some other cause should be suspected at once. Similarly, if a tube does not progress beyond the duodenum or upper jejunum, strangulation obstruction should be suspected. Johnston[15] states that he cannot recall a case in which a tube progressed well in the presence of strangulation obstruction of the small bowel. Once a balloon tube has reached the desired level or point of obstruction, the balloon should be deflated. Leaving an inflated balloon in one place may cause perforation of the bowel from pressure necrosis.[25]

If balloons containing mercury leak, come loose, or rupture, the spillage of mercury into the bowel is usually of no consequence. However, it is conceivable that free mercury could find its way into ulcerated portions of the bowel or into a colonic diverticulum and possibly give rise to serious complications. A case has been reported in which the mercury found its way into the appendix, causing acute appendicitis. At operation free mercury was demonstrated within the lumen of the appendix.[26]

If the patient is being permitted to drink while intubated, the use of physiologic saline solution instead of water will help to combat chloride losses. Also, patients eating and drinking while intubated, however restricted, are less apt to develop irritation or ulceration in the pharynx or esophagus. Frequent lubrication of the tube is essential to avoid the formation of painful encrustations in the nose around the tube. The tubes should be pulled out 4 to 6 inches every few hours and cleaned and lubricated generously. The nasopharynx should be kept moistened, and constant observation for the development of otitis media should be maintained, particularly in children. The use of some type of lozenge is helpful in relieving local discomfort from the tube.

Regardless of the type of suction unit that is preferred or available, it must be periodically checked to be certain it is in proper working order. An intestinal tube is of no value unless one end of it is connected to an effective source of negative pressure.

Any balloon may overdistend with gases that have diffused into it from the intestine. This overdistention may result in mechanical obstruction of the bowel or make removal of a single lumen tube hazardous by telescoping the bowel over the balloon as it is being pulled upward.

Cantor[3] has made an extensive study of the gases in the obstructed bowel. These consist primarily of 70 to 80 per cent nitrogen, 2 to 12 per cent hydrogen, 2 to 12 per cent hydrogen sulfide, 4 to 18 per cent carbon dioxide, and 1 to 10 per cent oxygen. The nitrogen, oxygen, and hydrogen concentrations approximate those generally present in air. The carbon dioxide and hydrogen sulfide, however, are greatly increased and increase progressively with the duration of the obstruction. Carbon dioxide will diffuse rapidly through all balloons until the pressure of the gas in the bowel and in the balloon is equal. The latex balloons of the Miller-Abbott and Harris tubes are 0.06 mm. thick, while the neoprene balloon of the Cantor tube is 0.24 mm. thick. Cantor has demonstrated that carbon dioxide will diffuse through the latex balloon more rapidly than it will through the neoprene balloon. Furthermore, since the Cantor balloon is four times as thick as the latex balloons, diffusion will be one-fourth as rapid through this balloon as through the latex balloons. He has also demonstrated that the walls of a balloon must be separated for significant amounts of diffusion to occur. The presence of air, mercury, or the shaft of the tube within the balloon keep the walls of the bal-

loon separated. By puncturing the Cantor balloon as previously described, a safety valve is created for the escape of any excess gases that may diffuse into it. The balloon of the Harris tube may be provided with a safety vent by tying the neck of the balloon to the tube over a 22-gauge needle and then removing the needle. No such safety factor is present or possible with the Miller-Abbott or Johnston tubes. Latex is much more permeable to hydrogen sulfide than is neoprene. However, since this gas diffuses through the balloons very quickly it constitutes no hazard since, as the bowel is decompressed, the gas quickly diffuses back into the intestinal lumen. The mercury present in a balloon reacts with this hydrogen sulfide to form mercuric sulfide, which accounts for the black discoloration of the balloons after they are removed from the patient. While this has no effect on the permeability of the balloon, it does render latex much less elastic, and therefore more apt to break under stress.

Eade[27] and his co-workers, in an excellent paper on nasogastric suction, present a list of complications that have been reported in the literature as a result of intestinal intubation.

TABLE III—COMPLICATIONS ASSOCIATED WITH INTESTINAL INTUBATION

Complications	Number Reported
Severe injury to the nasal passages	5
Injury to the larynx leading to ulceration, cord paralysis, or stenosis	22
Injury to the esophagus with esophagitis, ulceration, perforation, stenosis, or rupture of varices	12
Perforation of the stomach or intestine	13
Obstruction from knotting, intussusception over the tube, or balloon distention*	39
Complications from spillage of mercury†	4
Severe disturbances in fluid balance	4

*Intestinal tube balloons causing obstruction have been distended with intestinal gas, milk shake, mercury, air, sulfa, and oral feedings.

†Mercury spillage is usually considered to be of little significance, yet 4 cases of unusual complications associated with mercury have been reported. These required 5 additional operations and led to 1 death.

The complications listed required 49 immediate operations, including 24 tracheotomies, and led to the death of 8 patients. In addition, the instances of laryngeal and esophageal injury almost always led to long term problems with multiple later dilatations and operations, and usually were associated with permanent damage.

The question of when to remove a tube is also of importance. There is no point in leaving an intestinal tube in place after it has successfully accomplished its purpose, yet if it is removed too soon reintubation may be necessary. When clinical evaluation of the patient shows that the obstruction has been overcome, a scout film of the abdomen is taken to determine the status of the intestinal tract. The tube is then clamped off for 24 hours and another film is taken at that time. If the second film shows no dilated loops of small bowel and there is gas in the rectosigmoid, and if physical examination reveals active peristalsis on auscultation, no increase in distention, no return of nausea or vomiting, and passage of flatus, then the tube can be removed. The tube is connected to suction and is removed slowly at the rate of 12 inches every hour. It is important that the tube not be forcefully pulled if any resistance is encountered. If after waiting 5 to 10 minutes resistance is still encountered, *stop* and obtain an x-ray of the abdomen to determine whether the tube is kinked or knotted or the balloon overdistended; then, proceed accordingly.

Summary and conclusions

Intestinal intubation requires a reasonable amount of skill, a good deal of patience and tact, an understanding of the pathologic physiology of intestinal obstruction, keen diagnostic acumen, and a great deal of common sense. An intestinal tube is much like the splints and traction apparatus used in orthopedic work; it cannot think for itself and is no more effective than the thinking of the person using it. Attention to details will result in the avoidance of errors and complications, which are usually due to carelessness or neglect. The house staff and nursing personnel of the hospital must be instructed in the technic and problems of intubation, but they should not be expected to assume the responsibility for the effectiveness of this method of treatment.

The various types of tubes commonly used today have been described, as well as the problems that may arise in connection with their use. It would appear from the numerous methods advocated for passage of the air-filled balloon tube through the pylorus that this is often not an easy procedure and delay in getting such a tube into the intestine may be costly. These tubes leave much to be desired despite the fact that they are designed and based on sound physiologic principles.

A technic for passage of intestinal tubes is described in detail. On the basis of my experience and interest in this subject, it is my opinion that the Cantor intestinal tube fulfills practically all of the requisites for a good intestinal tube, and it is my first choice. It is easily and rapidly passed with a minimum of trauma and discomfort to the patient, with a simple routine which seldom requires the assistance of a radiologist. It is based on the fact that mercury will always run downhill and seek its lowest level. If anatomic relationships are kept in mind, the patient can be so positioned as to utilize this fact to advance the tube. Progress of the tube is enhanced by ambulation, a highly desirable factor. The Cantor tube is less apt to cause complications because of its construction and design. Its use in the management of intestinal obstruction is encouraged in preference to other tubes.

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References

1. Miller, T. G., and Abbott, W. O.: Intestinal intubation: practical technique. Am. J. M. Sc. 187:595-599, May 1934.

2. Johnston, C. G., *et al.*: Decompression of small intestine in treatment of intestinal obstruction. J. Am. M. A. 111:1365-1368, Oct. 8, 1938.

3. Cantor, M. O.: Intestinal intubation. Charles C Thomas, Springfield, Ill., 1949.

4. Crowley, R. T., and Johnston, C. G.: Physiological principles in intestinal obstruction. S. Clin. North America 26:1427-1439, Dec. 1946.

5. Gendel, S., and Fine, J.: Effect of acute intestinal obstruction on blood and plasma volumes. Ann. Surg. 110:25-36, July 1939.

6. Gatch, W. D., Owen, J. E., and Trusler, H. M.: Effect of distention of bowel upon its circulation and upon absorption from its lumen. West. J. Surg. 40:161-167, April 1932.

7. Herrin, R. C.: Chemical changes in blood and intestinal juice produced by loss of intestinal juice. J. Biol. Chem. 108:547-562, Feb. 1935.

8. Wiggers, C. J.: Physiology in health and disease. Ed. 4. Lea & Febiger, Philadelphia, 1944.
9. Cantor, M. O.: Personal communication.
10. Anson, B. J., and Maddock, W. G.: Callander's Surgical anatomy. Ed. 3. W. B. Saunders Co., Philadelphia, 1952.
11. Miller, T. G., and Abbott, W. O.: Small intestinal intubation; experiences with double-lumened tube. Ann. Int. Med. 8:85-92, July 1934.
12. Johnston, C. G.: Technique of intestinal intubation, in Nelson's Loose leaf surgery. Thomas Nelson & Sons, New York, vol. 5, chap. XIV, pp. 651-662, 1941.
13. Harris, F. I.: New rapid method of intubation with Miller-Abbott tube. J. Am. M. A. 125:784-785, July 15, 1944; correction 126:718, Nov. 11, 1944.
14. Harris, F. I.,: Intestinal intubation in bowel obstruction; technique with new single lumen mercury weighted tube. Surg. Gynec. & Obst. 81:671-678, Dec. 1945.
15. Johnston, C. G.: Personal communication.
16. Bartlett, L. Ç.: Bedside manometric test to localize balloon of Miller-Abbott tube in intestinal obstruction. Surg. Gynec. & Obst. 97:33-38, July 1953.
17. Abbott, W. O.: Use of Miller-Abbott tube in diagnosis and treatment of disorders of gastrointestinal tract. Advances Int. med. 1:29, 1942.
18. Mayer, H., Jr.: Cited by Cantor, M. O.: *op. cit.*, ref. 3.
19. Nash, J.: Surgical physiology. Charles C Thomas, Springfield, Ill., 1942.
20. Pendergrass, E. P., *et al.*: Studies of small intestine; effect of foods and various pathologic states on gastric emptying and small intestinal pattern. Radiology 26:651-662, June 1936.
21. Nolan, J. O., and Finley, G. C.: Aseptic intestinal decompression during surgery. New England J. Med. 242:54-55, Jan. 12, 1950.
22. Smith, G. A.: Long intestinal tubes for operative decompression and postoperative ileus. J. Am. M. A. 160:266-268, Jan. 28, 1956.
23. May, A. M., and Norman, G. F.: Intestinal obstruction; treatment of certain cases with intubation at operation. West. J. Surg. 62:37-38, Jan. 1954.
24. Barnes, J. P.: Trocar decompression in acute small bowel obstruction. Surgery 37:542-548, April 1955.
25. Folley, J. H.: Medical management of intestinal obstruction, with special reference to use of Miller-Abbott tube. New England J. Med. 228:606-612, May 13, 1943.
26. Birnbaum, W.: Inflammation of vermiform appendix by metallic mercury. Am. J. Surg. 74:494-496, Oct. 1947.
27. Eade, G. G., Metheny, D., and Lundmark, V. O.: Evaluation of practice of routine postoperative nasogastric suction. Surg. Gynec. & Obst. 101:275-279, Sept. 1955.

Additional references

Albrecht, F. K.: Modern management in clinical medicine. Williams & Wilkins Co., Baltimore, 1946.
Cantor, M. O.: Gastrointestinal obstruction. To be published.
D'Angelo, G. J.: Adventures in intubation. Surg. Gynec. & Obst. 101:247-249, August 1955.
Gray, J.: Editorial: Small bowel obstruction in postoperative patient. Surg. Gynec. & Obst. 98:117-119, Jan. 1954.
McCune, W. S., and Keshishian, J. M.: Postoperative intestinal obstruction. Surg. Gynec. & Obst. 96:567-572, May 1953.
Stevenson, J. K., and Harkins, H. N.: Unusual complications from use of intestinal tubes and drains. Am. J. Surg. 91:314-322, March 1956.
Wangensteen, O. H.: Intestinal obstructions. Ed. 3. Charles C Thomas, Springfield, Ill., 1955.

SYMPOSIUM on ileostomy and colostomy

Surgical technic

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THE HIGH PERCENTAGE of complications encountered in ileostomy and colostomy should concern all surgeons because function is so closely related to the constructed stoma. In this paper I shall place special emphasis on the technics of single-barreled ileostomy and colostomy since the openings created usually become permanent. Because of the frequent difficulties arising from conventional or classic procedures in the past, numerous authorities[1-4] have modified the method of leaving the bowel with its exposed serosal coat projecting several centimeters beyond the skin. By this method the bowel was left closed for a time in order to prevent the spill of intestinal contents upon the wound. When the serosal coat is left exposed the bowel must undergo a sequence of events that Turnbull,[2] in his reference to ileostomy, calls "maturation of the ileostomy." In this period, the serosal coat of the ileum (the same is true of the colon in colostomy) is exposed to infection which results in fibrosis. The serosal surface slowly contracts and pulls the free mucosal border down toward the abdominal skin. This process takes 4 to 6 weeks and frequently ends in stenosis, producing partial obstruction, dilatation of the intestines, watery diarrhea, abdominal cramping, anorexia, and electrolyte and fluid depletion.[1,5]

Turnbull[2] suggested that ileostomy dysfunction could be prevented by covering the serosa with mucous membrane and suturing the mucous membrane to the skin. Donald[4] later reported his method of colostomy in which, at the time of operation, the mucous membrane is sutured to the skin. Since these reports I have followed the same technics with gratifying results. There has been no wound infection despite immediate opening of the bowel, and this is credited to bowel sterilization and to the fact that in these surgical procedures there is inhibition or cessation of peristalsis of the bowel for 2 or 3 days. Little or no soiling of the bandage has occurred during this time, and this lack of soiling allows sufficient time for union to take place between the mucous barrel of the bowel and the skin.

The incision for ileostomy or colostomy should be independent of the site selected for the preparatory work on the intestines. This decreases the number of wound disruptions and incisional hernias.[6] For the ileostomy site I prefer to bring the ileum through the stab wound 1½ inches inferior and to the right of the umbilicus after first removing a 1½-cm. wafer of skin and an anterior sheath of the rectus. The rectus muscle is slightly retracted laterally and split along with the peritoneum. The method of colostomy is the same for the change to the left side of the abdomen, if the left side of the colon is used. The site should be altered to bring the bowel out in as straight a line as possible. It is my opinion that lateral retraction of the rectus muscle may aid in control of the intestinal stream. The site mentioned above is satisfactory for the fitting of an appliance.

The mesentery and mesocolon must extend to the skin edge. In ileostomy prolapse may be prevented by suturing the mesentery for a short distance to the anterior perietal peritoneum.[6,7] If prolapse occurs, Lichtenstein and Herzikoff[8] suggest the use of a modified

Nobel plication procedure of the distal loops of ileum. It is my opinion that this procedure should be used in all cases of ulcerative colitis, for Colcock[9] found that an ileostomy in the presence of ulcerative colitis is notorious for its tendency to prolapse. In colostomy the appendices epiploicae tabs are sutured to the parietal peritoneum.

The ileostomy or colostomy limb should be of sufficient length to prevent tension of the bowel as it is brought out the abdomen to the skin. The opening of the abdominal wall should be of such size as to accommodate the bowel and allow the index finger to pass along the side of the bowel without constricting the bowel.

Methods of performing ileostomy

The method of ileostomy varies according to whether it is to be temporary or permanent. If the need is temporary, a tube method is preferable so that the fistula may close spontaneously when the ileum is no longer needed. If complete diversion of the intestinal contents is desired, complete transection of the ileum is required.

In performing tube ileostomy in intestinal obstruction it may be necessary first to partially aspirate the small intestines. This allows the thinned intestinal layers to thicken and better withstand manipulation of the involved loops. This may be done with needle and syringe or by Holden's method in which a tube is inserted through a purse-string opening in the distended intestinal wall. Suction is applied and the intestinal contents milked down to the tube. In tube ileostomy the Witzel method appears to be very adaptable. I alter the technic by first bringing the open end of the catheter out a stab wound and clamping it. This prevents contamination of the abdominal wall on entering the ileal lumen. A small opening is made in the ileum and the catheter is passed distally in the lumen. The catheter is anchored with a Lembert suture. The tube is then buried within the folds of the bowel for a short distance with interrupted Lembert sutures. The ileum is pulled to the anterior parietal peritoneum, and the catheter is sutured to the skin. In certain cases I have found it useful to substitute transcecal or transappendicocecal intubation of the ileum, which is a more difficult procedure, but it avoids adherence of the ileum to the anterior abdominal wall and narrowing of the ileum.

Double-barrel ileostomy is useful only when viability of the ileum is questionable or if the patient is too ill to withstand a longer procedure. It is performed in the same manner as double-barreled colostomy, by bringing out a loop of ileum and supporting it on the skin with a glass rod inserted through the mesentery. A double-barreled ileostomy with separation of the stoma may be performed in order to divert the intestinal stream completely and, at the same time, to irrigate the colon. In this instance the ileum is brought out through two separate stab wounds.

Single-barreled ileostomy is most commonly employed in chronic nonspecific ulcerative colitis and as a preliminary to total colectomy. I use the method of Crile and Turnbull.[1] The proximal ileum is brought out of a stab wound in the manner previously described. At least 2 inches of ileum are projected above the skin and the mesentery tacked to the parietal peritoneum and also to the subcuticular tissue with 5-0 chromic sutures. The index finger of the left hand is passed into the lumen of the ileum, and a circumferential incision is made through the serosal and muscular layers at a point ¾ inch away from the abdominal skin. A similar longitudinal incision is then made from the circumferential incision to the end of the ileostomy. The outer 1¼ inches or serosal and muscular coats are then dissected from the submucosa. Bleeders are controlled and the pliable mucosal-submucosal tube is turned inside out and pulled down over the remaining ¾ inch of serosal covered ileum. The pulled-down mucosa is then sutured to the epidermis with 5-0 interrupted silk sutures. This elongated ileostomy aids in the protection of the skin and in fitting a leakproof ileostomy appliance.[1]

Colostomy

Tube colostomy is usually performed as catheter cecostomy. This procedure is done in the same manner as tube ileostomy. The catheter is usually removed on the tenth to twelfth postoperative day.

Loop colostomy is indicated for relief of acute obstruction when the patient is too ill to withstand a lengthy procedure. A tape is passed under the bowel through the mesocolon, and the bowel is pulled through the incision. A glass rod with rubber tips on both ends is passed through the opening in the mesocolon and holds the bowel in position anterior to the abdominal skin. The appendices epiploicae are sutured to the parietal peritoneum and the skin. Preferably no opening is made into the lumen of the colon until 18 to 24 hours have elapsed in order to permit protective adhesions to seal off the peritoneal cavity. The opening in the bowel is made transversely approximately 3 cm. in length at the apex of the loop. This incisional direction parallels the segmental blood supply. Later the loop may be completely transected and the glass rod removed, leaving a double-barreled colostomy. Still later the colostomy stoma may be closed by excising a margin of skin, dissecting the limbs free, and removing the scarred edges of the colostomy stoma. The bowel is anastomosed and the muscle, fascia, and skin are closed over the bowel.

Spur colostomies are not performed as frequently as in previous years, having been replaced by one-stage bowel resection. Closure of the stoma is easier than in loop colostomy, but should not be used if marked distention of the colon is present because of the undesirability of placing sutures in the thinned-out bowel walls. A generous loop is brought out through the incision. The afferent and efferent limbs are rotated 90 degrees toward each other and the adjacent surfaces sutured together for 15 cm. A glass rod is placed through the mesocolon beneath the bowel. The abdominal wall is closed about the loop as in loop colostomy. Eighteen to 24 hours later an incision is made on the antemesenteric border of the apex of the loop and after healing has taken place, the colon is further transected and the glass rod removed. If closure is later desired, a spur clamp is applied, the fingers of the left hand being used as a guide. The clamp is tightened gradually each day until the blades cut through the septum and the clamp falls from the colostomy wound. If proper communication exists between the afferent and efferent limbs, extraperitoneal closure may be utilized.

A terminal single-barreled colostomy is performed almost exclusively on the sigmoid and in cases where bowel continuity is not to be restored. It is performed in much the same manner as single-barreled ileostomy, with the exception that the bowel is brought out flush with the skin of the abdomen. The bowel is fixed to

the parietal peritoneum by suturing to it the adjacent appendices epiploicae. The bowel is further supported at the skin level by suturing the serosal layer to the dermis with interrupted chromic 4-0 sutures. The mucous barrel is then sutured to the epidermis with interrupted 5-0 silk sutures.

Summary and conclusions

The important principles of fashioning functional ileostomies and colostomies have been discussed.

Modified technics have been presented which are designed for the correction of complications arising from stomal strictures.

Technics for ileostomy and colostomy have been described.

The high incidence of complications following the conventional operations for construction of the single-barreled ileostomy and colostomy stoma indicates the inadequacy of these methods.

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References

1. Crile, G., Jr., and Turnbull, R. B., Jr.: Mechanism and prevention of ileostomy dysfunction. Ann. Surg. 140:459-466, Oct. 1954.

2. Turnbull, R. B., Jr.: Symposium on ulcerative colitis; management of ileostomy. Am. J. Surg. 86:617-624, Nov. 1953.

3. Johnston, P. W., and Movius, H. J.: Colostomy and ileostomy; simplified technic. Am. J. Surg. 92:208-213, Aug. 1956.

4. Donald, D. C.: Revised technique for construction of single barreled colostomy. Surg. Gynec. & Obst. 101:642-646, Nov. 1955.

5. Warren, R., and McKittrick, L. S.: Ileostomy for ulcerative colitis; technique, complications, and management. Surg. Gynec. & Obst. 93:555-567, Nov. 1951.

6. Lyons, A. S.: Ileostomy; management and complications. Surg. Clin. North America 35:1411-1420, Oct. 1955.

7. Garlock, J. H.: Surgical treatment of intractable ulcerative colitis. Ann. Surg. 113:2-14, Jan. 1941.

8. Lichtenstein, I. L., and Herzikoff, S. S.: Recurrent ileostomy prolapse, an old problem; presenting new approach. Ann. Surg. 141:95-97, Jan. 1955.

9. Colcock, B. P.: Technic of ileostomy. Surg. Clin. North America 31:775-788, June 1951.

Additional reference

Shackelford, R. T., and Dugan, H. J.: Surgery of alimentary tract. W. B. Saunders Co., Philadelphia, 1955.

Management of patients

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THE CARE OF THE PATIENT with a colostomy or ileostomy begins before surgery is performed. The patient must understand and accept the necessity for the surgical procedure. The methods of bowel and odor control should be thoroughly explained in simple language and with diagrams or pencil sketches for clarification. If possible, explanation by someone who has adjusted to colostomy or ileostomy has an excellent effect on the morale of the patient.

Time should be taken to explain to the patient's spouse the importance of his or her cooperation, encouragement, and acceptance of the newly located anus. It should be emphasized to the patient and his family that odor and staining can be controlled and that the individual with an ileostomy or colostomy may be gainfully employed and is socially acceptable. The patient must be encouraged to realize that the emptying of the products of digestion is important to his health and that the location of their exit from his body is of minor consequence. In fact, these patients are in better health postoperatively and can maintain their employment status without the previous interruptions caused by exacerbations of their bowel disease.

Choice of operative time is regulated by the physical and psychologic status of the patient.

Postoperative phase

Immediately following surgery, the skin is protected by application of compound tincture of benzoin, which is followed by use of the various creams, powders, pastes, et cetera. Karaya powder is best for weeping, excoriated skin surfaces; it absorbs moisture, and adhesive material can be used directly on the area for attachment of the appliance.

For the irritating liquid stool of the ileum and right colon, the use of a continuous drip of dilute hydrochloric acid solution to neutralize its alkalinity is suggested. This was first advocated by Dr. William Baldwin of the Hospital of the Philadelphia College of Osteopathy. The rate of drip and the dilution are guided by nitrazine indicator paper. This procedure is also very effective in duodenal or pancreatic fistulas.

Control of fecal discharge

In addition to the usual postoperative routines, there are special problems that must be recognized and solved. Collection of the fecal discharge may be managed in several ways. A colon tube or large catheter can be tied into the protruding bowel and connected by rubber tubing to a collecting bottle on the side of the bed. This restricts the patient's activity and is not too desirable, and the danger of trauma and subsequent fistulization is always present. The Perry type of bag is placed at the completion of surgery and is used to collect fecal discharges. This permits close observation of the stoma, the surrounding skin, and the characteristics of the bag contents. In addition, the patient is free to move about the bed, and early ambulation is permissible.

A well-fitting colostomy bag of the proper ring size will drain the liquid stool from the ostium and skin quickly and efficiently and prevent skin soiling and weeping.

To encourage formation of a firm stool, the diet is of low residue at the start. Alteration in the character of the stool to either extreme requires discussion of food intolerance or idiosyncrasies. As an example, coffee is a laxative for some patients but has no effect on the bowel function of others.

The following is a foundation diet that is excellent for maintaining a firm stool:[1]

Meats: Bacon, liver, beef, chicken, lamb

Fish: Boiled or broiled

Eggs: Boiled, scrambled, or poached

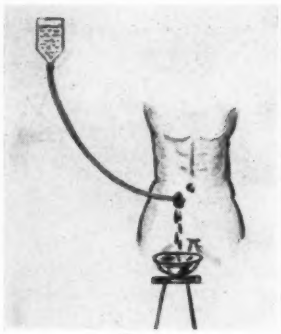


Fig. 1

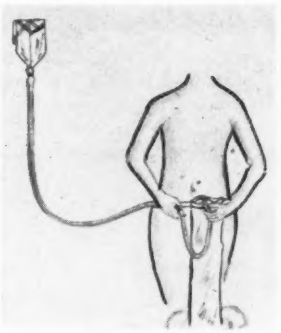


Fig. 2

Fig. 1. Open irrigation system. Fig. 2. Closed irrigation system (Geer compact and irrigator).

Vegetables: Potatoes, rice
Breads: Toast (white or rye), plain crackers
Cereals: Farina, Cream of Wheat, puffed rice or wheat, corn flakes, rice crispies, strained oatmeal, noodles, spaghetti without sauce
Beverages: Weak coffee or tea, light cream, boiled milk (sugar to sweeten)
Soups: Without vegetables or spices
Desserts: Custards, cornstarch puddings, junkets, gelatins, rice pudding, tapioca, simple cake and cookies, plain ice cream.

Maintenance of a regular, firm stool with the above foods justifies the following additions, one item at a time:

Juices: Strained orange juice
Fruits: Banana, canned or cooked peaches, apricots, pears, applesauce, baked skinned apples
Vegetables: Puréed (if these do not cause loss of control, the following cooked vegetables are added: tender carrots, beets, squash, asparagus)
Salad: Green lettuce in small amounts with plain mayonnaise
Milk: Unboiled
Cheese: American, Swiss, or cream cheese
Desserts and sweets: Jelly or jams without seeds.

The following foods usually cause irregularity of stool function and should be prohibited:

Condiments: Spices, mustard, horseradish, catsup, vinegar
Vegetables: Raw vegetables, cucumbers, spinach, celery, cabbage
Fruits: Raw

Fig. 3. Closed irrigation system—disposable tubes. Fig. 4. Closed irrigation system—metal.

Fig. 3

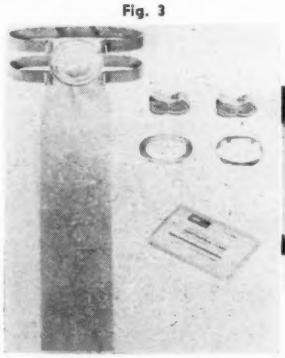
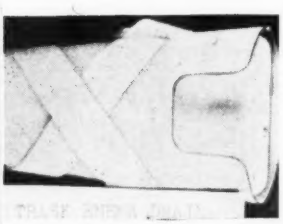


Fig. 4



Beverages: Iced, carbonated
Cereals: Bran, wheat
Breads: Whole wheat, pumpernickel
Meats: Pork, veal, duck
Miscellaneous: Fried foods.

The basic goal of the above dietary is production of a constipated stool. Once this has been accomplished, additions and subtractions are advised according to the tolerance of the patient.

Small amounts of whiskey or wine usually cause no difficulty. Beer is unpredictable. I have, however, seen patients who were able to drink the same amount of beer they drank before their colostomy.

Irrigation of colostomy

There are two systems available for bowel irrigation:[2]

1. Simple open system: Equipment is the usual enema apparatus; that is, an ordinary 1- or 2-quart enema bag or can, a 26 F soft rubber catheter, and a deep 12-inch basin.

2. Closed system: Equipment is specially designed for this purpose. The principle of the closed system is the conveyance of fecal discharge through a rubber tube directly from the colostomy to the toilet bowl without the patient's seeing the excreta. Examples are Binkley's plastic cup, Best's metal urinal, Dudley Smith's appliance.

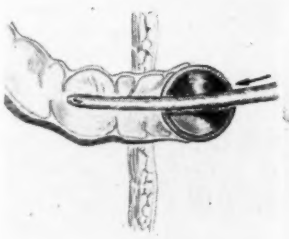


Fig. 5

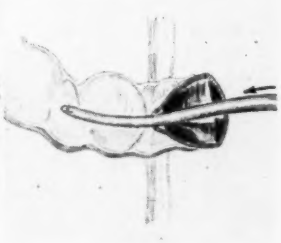


Fig. 6

Fig. 5. Rubber ball stop valve—open system. Fig. 6. Hygeia stop valve—open system.

Two quarts of cool (80 F.) rather than warm water are used. Cool water stimulates peristalsis. To prevent leakage between the catheter and stoma, several types of plugs have been developed. Examples are Dudley Smith's method utilizing a catheter through a rubber ball, a catheter through the large nursing rubber nipple, and a catheter through the bulb of an irrigating syringe.[2] Trade names are as follows: Davol, Guck, Greer, Fazio, Binkley, Pappas, Wagner, Travellor, Perry, Trask, Colostom-ease and Nu-Komfort.

Regulation should be developed and patients are encouraged to take enemas each day at the same time. Whether the entire 2 quarts are given in toto or in divided amounts is a matter of individual preference and is not of great importance. However, should pain develop during the procedure, the flow of water should be stopped at once and not resumed until the pain has subsided. Regardless of whether the open or closed method is used, the irrigation should be continued until the return is clear. Since the bowel will seep or dribble for 20 to 30 minutes before it is completely empty, time must be allowed for this occurrence. However,

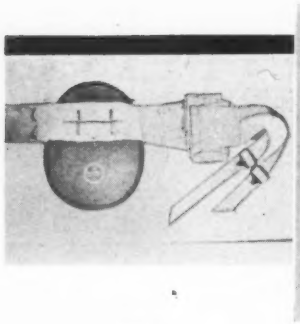


Fig. 7

Fig. 8

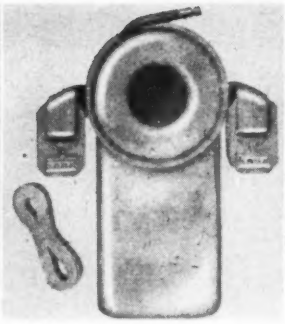


Fig. 9

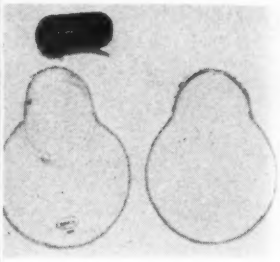


Fig. 10

Fig. 7. Rubber colostomy bag: fixed ring maintained with belt (Grenfell style). Figs. 8 and 9. Rubber colostomy bag: ring is inflated to insure air-tight fit (Davol style). Fig. 10. Rubber colostomy bag with rubber ring extending beyond skin level (Hanna style).

once the patient has mastered the technic of self-administration, the entire procedure should not require more than 45 to 60 minutes.

An impacted stool may be softened by preliminary instillation of olive oil. Passage of a lubricated finger through the stoma will facilitate insertion of the catheter.

The ultimate goal is bowel evacuation every 2 to 3 days. The patient's acceptance of his new timetable is as important as his acceptance of the newly located anus.

The colostomy bag

There are many types of colostomy bags. Their use is relegated to the early reception of the fecal discharge. After the incision has healed, the consistency of the bowel contents has become firm, and the timetable has been regulated, colostomy bags are no longer necessary.

Except for unusual circumstances, the patient is able to go about his daily routine with nothing more than a gauze or cellucotton pad covering the stoma. Rubber sheeting or plastic sheeting may also be used. The contacting surface is covered with a thin layer of petroleum jelly to prevent trauma of the bowel mucous membrane. The pad is held in place with a light girdle in the female or a wide web-elastic band in the male.

If the patient develops diarrhea or flatulence, the bag is replaced temporarily while the etiologic factors are sought and corrected.

Some of the types of colostomy bags available are as follows:

The Torbot bag can be worn after the tenth postoperative day and for 3 months postoperatively. It is supplied with a cemented ring of varying diameters (1¼, 1, and ¾ inch) and a removable plastic bag.[3,4]

The Perry bag is a temporary type which is attached to the skin by means of double-coated Scotch tape. It can be worn after the fourth postoperative day.[5]

The Rutzen-Koenig type is a rigid-faced bag used after 6 to 8 weeks postoperatively.[5,6]

The Permatype bag is made to order to fit unusual abdominal contours. It may be worn for 3 to 7 days, and with the newer cements, it can be worn 14 to 21 days without changing.[3]

The Haase bag is a temporary, inexpensive type, and the Dixon is a permanent type.[7]

The Sorenson Coloplast is a disposable, inexpensive unit.

The Fazio appliance, a disposable bag, and the Pierce bag can be used on the fourth or fifth postoperative day.[6]

The Colostomy Comfort Pouch, weighing 1 ounce, consists of an aluminum ring with a disposable moisture-proof cellophane bag. It is held in place by two adjustable belts.[8]

Other appliances are the Trask Colostomy Dome, the Kraske Cup, the Brinckley Irrigator, and the Lamson Pessary.

Basically, colostomy bags can be typed as follows:

1. Those constructed of rubber and requiring a waist band to retain them in proper place

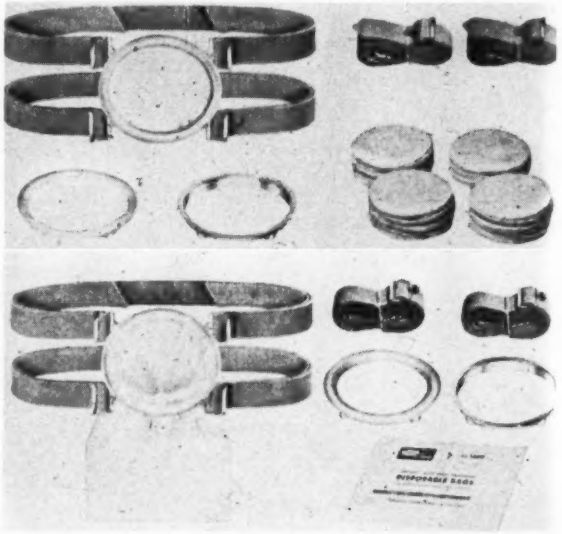
2. Those in which a skin cement is used to attach a fixed-size circumstomal ring, with a removal rubber or plastic bag, to the abdominal wall

3. Removable bags used with a diaphragmed ring (the opening in the diaphragm is cut to meet the specific size requirements of the patient's stoma)

4. A self-contained inexpensive unit that is fixed to the skin by its adhesive surface (the size of the opening is adjustable, and a belt is not necessary; the bag is made of transparent plastic and is expendable)

5. A metallic dome to protect the bowel from ex-

Fig. 11. Above: Belt and disposable pads. Below: Fixed ring with disposable bag, maintained with belt.



cessive pressure. This is used only for special problems or situations.

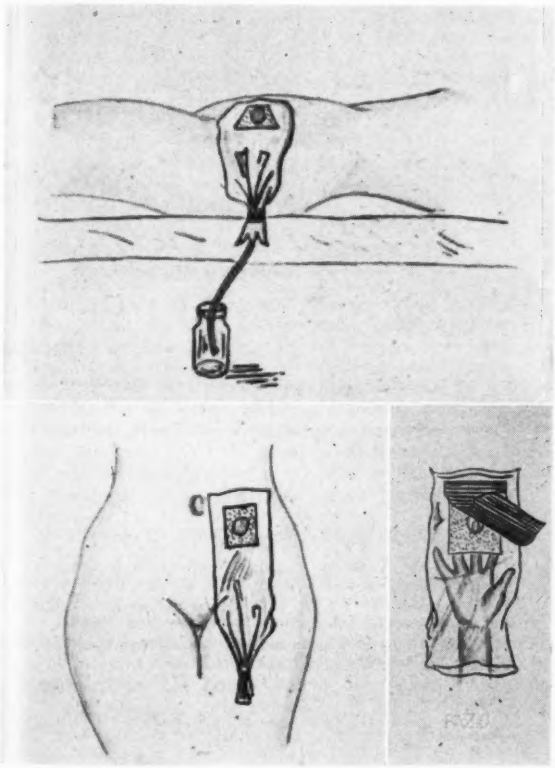
It is important to note that the opening in diaphragms or rings should be larger during the first 2 or 3 weeks postoperatively. This allows for the edema and swelling that follow surgery. When the edema subsides the opening in the diaphragm or ring is reduced. It should clear the protruding bowel by ½ cm. in all directions to prevent trauma or "choking." Permanent bags with rigid disks are dangerous when used before a stoma has lost its edema.[4]

A regular time for evacuation, formation of a constipated stool, and nonirritation of the skin are all attained with relative ease for the colostomy involving the large bowel distal to the midtransverse colon as this area normally produces a firm stool. However, the problem is more difficult when the ileum, cecum, ascending colon, or right transverse colon is involved. The normal consistency of the stool in these areas is liquid, and its constituents are very irritating and excoriating to the skin.

The use of the continuous drip of dilute hydrochloric acid solution with the indicator paper control is very effective. Silicon creams (Covicone cream, Sanchia cream, et cetera) are excellent for skin protection. They are applied as necessary, very thinly, to prevent cracking. For the weeping, moist skin, powdered Sperculia Gum (karaya) is advocated. It absorbs the moisture and permits application of the skin cement and appliance directly over the area so treated. Aluminum paste is less effective for skin protection.

The massive loss of fluids through the ileostomy, left colostomy, or wet colostomy is generally not comprehended. Patients can lose from 3,000 to 9,000 cc.

Fig. 12. Above: Disposable bag for postoperative use. Below: Disposable self-adherent, transparent bag which can be emptied without removal (Fazio style).



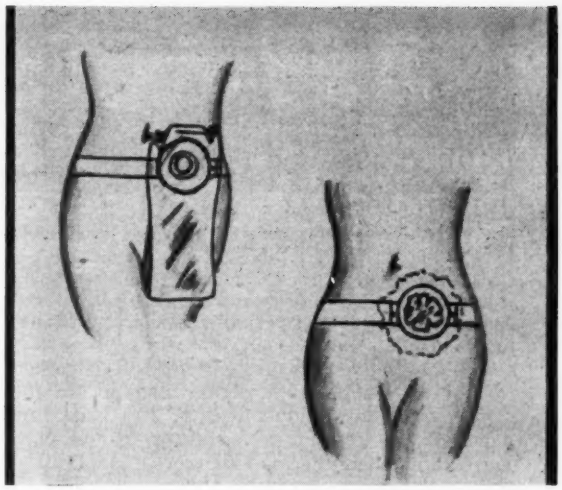


Fig. 13. Greer belt—constant: bags, irrigators, and pads are interchangeable, and disposable.

of fluids within 24 hours. Unless fluid intake and output are carefully measured and recorded, dehydration and starvation can rapidly develop without detection. Proper replacement therapy is mandatory to assure recovery of the patient.

Chlorides, potassium, and sodium losses are surprisingly rapid and ominous. They must be controlled with daily blood level determinations and proper replacements until physiology returns to normal.

Vitamin, mineral, and enzyme losses are progressive and persistent and must be adequately replaced orally and/or parenterally.

Early postoperative diet should be high in protein and low in fat to prevent hypermotility and diarrhea. Sodium chloride orally or parenterally should be liberally supplied.[6] After the fifth week, the ileal discharge becomes more solid and dietary restrictions can be eased, but the fat intake should continue to be limited.

Patients will lose weight persistently as long as the stool remains liquid and voluminous. As much as 40 to 50 pounds may be lost over a period of 6 to 9 weeks. With persistent care the stool will gradually become more solid, and the prestomal portion of the ileum will modify its function to develop "storage capacity." The weight loss stops, and much of the lost weight is gradually replaced. The stimulation of gastric ingestion and digestion or emotional and psychic problems will increase the rate and amount of ileal discharge. Baths should be taken before breakfast since discharge is least at that time.[6]

Ileostomy dysfunction may be mild or severe. If mild, it may pass unnoticed; if severe, it may be fatal. The single most important clue to the development of ileostomy dysfunction is the drainage of more than 1,000 cc. of ileal contents in 24 hours.[7] It usually occurs between the tenth and fourteenth days postoperatively but may develop any time between the second and twenty-first postoperative days. The etiologic factors are two: Either the prestomal section of the ileum loses its normal flexibility and peristalsis, or protruding ileum and stoma become rigid because of scar tissue formation on their exterior serosal surface. At times a combination of both factors is present. As a rule this problem is self-limited. The ileum be-

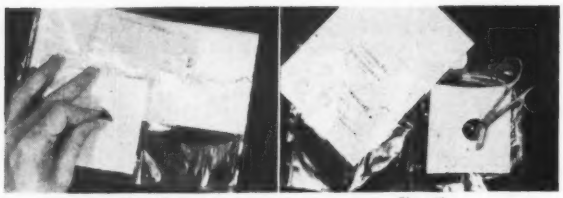


Fig. 14 Fig. 15

Fig. 14. Self-adherent, disposable bag with precut opening that can be altered to fit. Fig. 15. Technic of alteration.

comes adapted over a period of weeks, and the symptoms subside spontaneously.

Conservative management consists of catheterization of the ileum, gentle digital dilatation of the ileal stoma, and a low residue diet.[7] If 2 to 3 days' maintenance of this routine does not correct the symptoms (distention, vomiting, and diarrhea), a plastic operation on the stoma should be performed.[7] This consists of dividing radially in two or three areas the contracting collar (Bishop's collar[8]) of granulation tissue which forms over the extracorporal aspect of the stoma. If this does not suffice, the tight ring of skin around the base of the stoma is resected.

Ileostomy fistula may occur deep in the abdominal wall, at skin level, or above skin level. This permits infection and abscess of the abdominal wall or decreased efficiency of the collecting appliance.

The best treatment is prevention, that is, gentle bowel handling, careful suturing of the abdominal wall, avoiding suturing of the ileum to the abdominal wall, and adequate clearance of the stoma by the appliance ring. Correction of the fistula is surgical removal.

Ileostomy prolapse is most common between 4 and 6 months after the patient leaves the hospital. If a supporting pad and belt do not correct the problem, transplanting the ileostomy to the upper abdomen seems to be the most effective approach. If the prolapsed ileostomy is incarcerated and reduction is impossible, or if the prolapsed bowel is gangrenous, resection of the involved area and revision ileostomy constitute the procedure of choice.

For extensive, persistent skin excoriation, the use of a Bradford frame or elevated mattress is recommended. It contains a hole of sufficient size and location to allow direct gravity drainage into a container placed under the hole. The patient is, of course, prone. This will resolve the resistant problems in a few days.

It is suggested that institutions with a high incidence of colostomy and ileostomy establish an intestinal rehabilitation clinic or consulting service. This will encourage closer relationship between patient and surgeon and better adjustment of the patient to his problem. The results of the surgical procedure will be better observed, his psychologic and physiologic problems will be more thoroughly discussed, and his family will be more closely guided in their relationships with the patient. All of these bring the patient to a normal way of life sooner and more completely and give the surgeon an opportunity to follow more closely the extended postoperative recovery of his patient.

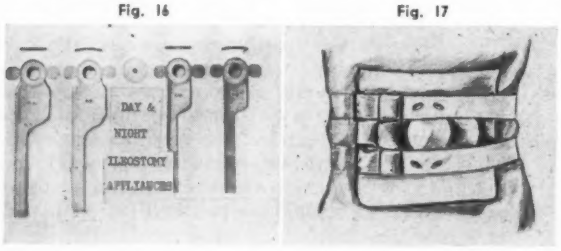
In many of the larger cities, ileostomy or colostomy clubs have been organized. Examples are QT of New York, QT of Boston, Ileostomy-Colostomy Group of Philadelphia, and Ileostomy Group of Los Angeles.

Some of these clubs have their own publications for their members. A form of group psychotherapy is practiced both preoperatively and postoperatively. Its opportunity for social interchange of ideas can not be overemphasized. The many problems relating to the varied phases of the care of the patient with colostomy or ileostomy are discussed, evaluated, and solved by the group.

Fig. 18. Patient with colostomy, wearing bathing suit.

Fig. 16. Rubber ileostomy bags to be used with belts. Fig. 17. Trask dome which protects colostomy.

Fig. 16 Fig. 17



Summary

The care of the patient with ileostomy or colostomy has been considered. The many problems have been presented with suggestions for their correction.

1737 Chestnut St.

References

1. Lyons, A. S.: Control of colostomy. Am. J. Digest. Dis. 1:79-94, Feb. 1956.

2. Marino, A. W. M., Caliendo, A. J., and Marino, M., Jr.: Modern management of colostomy. South. M. J. 47:1173-1180, Dec. 1954.

3. Turnbull, R. B., Jr.: Symposium on ulcerative colitis; management of ileostomy. Am. J. Surg. 86:617-624, Nov. 1953.

4. Lyons, A. S.: Ileostomy; management and complications. Surg. Clin. North America 35:1411-1420, Oct. 1955.

5. Cattell, R. B.: Surgical treatment of ulcerative colitis. Postgrad. Med. 14:221-225, Sept. 1953.

6. Fierst, S. M., Levine, R. M., and Ripstein, C. B.: Management of normal ileostomy. New York J. Med. 56:379-381, Feb. 1, 1956.

7. Warren, R., and McKittrick, L. S.: Ileostomy for ulcerative co-

litis; technique, complications, and management. Surg., Gynec. & Obst. 93:555-567, Nov. 1951.
8. Shackelford, R. T.: Bickham-Callender's Surgery of alimentary tract. W. B. Saunders Co., Philadelphia, 1955, vol. 2.

Discussion

HOWARD A. GRANEY, D.O., F.A.C.O.S., Des Moines, Iowa: Dr. Stewart, in his paper, has placed emphasis on the technic of a single-barreled ileostomy or colostomy. The procedure has been recommended in which the mucous membrane is sutured to the skin margins, thereby covering the serosal coat of the intestine. For the past 2 years I have been using this type of procedure and am much better satisfied with the results than with those obtained from the old method in which the serosa was allowed to granulate and fibrose. Postoperative complications with the mucous membrane technic have been few as far as the colostomy site is concerned. Therefore, I am in full agreement with Dr. Stewart as to the method of treating the serosa and mucous membrane.

It certainly is of the utmost importance that the proper site be chosen for ileostomy or colostomy. It might be stressed again that this site should be independent of the original incision whenever possible. It is wise in many patients to place the colostomy pouch upon the abdomen preoperatively and to note its method of fit so that one has a better idea as to the desired site for either the ileostomy or the colostomy. One of the mistakes made often in the past has been the placing of the ileostomy or colostomy so low that the belt holding the colostomy bag is high over the ileum, thereby causing irritation to the lower margins of the colostomy by constantly pulling up on this portion and resulting in many instances in excess granulation with stenosis of the ileostomy or fistula formation. The same will, in many instances, lead to leakage around the colostomy bag is high over the ileum, thereby causing irritation ostomy a frequent mistake has been the improper anchoring of the mesentery of the ileum to the peritoneum. Unless this is done carefully the result will in many instances be herniation or prolapse of the ileum necessitating reoperation. Herniation is easier to prevent in colostomy than in ileostomy.

A frequent mistake in performing the ileostomy or colostomy is the surgeon's placing of the suture into the serosa or muscularis of the bowel when he attempts to bring the mucous membrane back over the serosa and suture it to the skin. As a result of this error, many times there is formation of a fistulous tract which fails to heal, results in skin irritation, and often necessitates reoperation. Therefore it should be stressed that the mucous membrane is not sutured to the serosa or muscularis of the bowel but to the underlying surface of the skin margin. The size of the ileostomy opening in the skin, fascia, and peritoneum is usually large enough to admit the index finger.

603 E. 12th St.

Discussion

ADDISON HOMBS, D.O., Kirksville, Missouri: The surgical profession has pioneered in the development of a great variety of prosthetic appliances, including artificial limbs, eyes, and breasts, but a completely satisfactory substitute for the anus has yet to be devised. The voluminous literature covering the technics for colostomy and ileostomy procedures, with their various ramifications and incidental complications, bears witness to this statement. That the ideal prosthetic anus is still to be developed is likewise evident in the diverse colostomy and ileostomy appliances for controlling unexpected discharge of fecal material.

Since the surgical technics of colostomy and ileostomy construction are generally, for all practical purposes, well standardized, it seems obvious that surgeons must cease being pure mechanics in intestinal surgery and direct their efforts toward the management and rehabilitation of the colostomy patient. Excellent surgeons, capable of managing the most difficult surgical problem, are being trained, but it is increasingly evident that many are but surgical mechanics at best. It has been my displeasure to observe patients who, surgically, had excellent colostomies, but who are living as social outcasts because their "mechanic" failed to educate them properly in the simple and easy program of colostomy control. Far too many of these patients are dismissed from the hospital with little more than a poorly fitting colostomy bag and without instruction for care.

I would like to emphasize Dr. Kohn's opening statement that care of the colostomy patient begins before the operation is performed. If colostomy is considered, the patient should be psychologically conditioned for its acceptance. Every surgeon has observed the emotional depression and coincidental physical breakdown suffered by the patient with an unexpected colostomy. I also echo Dr. Kohn's thought that a satisfied colostomy patient is one of the best salesmen for this procedure and, whenever possible, I try to have an intelligent patient who has had a colostomy discuss the situation with the colostomy candidate. The lay approach to the layman is usually more sympathetic, understanding, and instructive than we professional people sometimes give credit for.

It has been my practice to insist on complete patient participation in his colostomy care from the earliest postoperative phase. The patient is made to understand that only when he can completely handle his own colostomy care will he be dismissed from the hospital. This approach seems to hasten his interest in the management of his problem and results in more complete cooperation. The patient should be thoroughly educated and indoctrinated by the surgeon himself in the steps necessary to secure complete bowel evacuation. It is of utmost importance that the instruction not be delegated to interns, nurses, and other attendants who tend to classify this category of patients as an obnoxious "must" in their 8-hour tour of duty. Much will be gained by example and in patient psychology if the surgeon will personally administer and supervise the cleansing enemas, encouraging and instructing the patient during the procedure. Admittedly, this involves much time, but the surgeon's responsibility to the patient in this respect is as great as in the operation itself.

I recommend the simple open method of colostomy irrigation, substituting a simple apron of washable polyethylene or similar plastic for the deep basin previously described. This apron is secured immediately below the colostomy stoma and the dependent portion or edge is directed into the toilet receptacle in funnel fashion. Feces go directly into the toilet, abdominal wall soilage is minimized, and the patient has both hands free to handle the irrigating equipment. The plastic apron is easily cleaned and absorbs no odors. In addition to the cleansing enemas, I feel it is helpful to have the patient insert the index finger, covered with a well-lubricated finger cot, into the stoma at frequent intervals to insure continuing patency and to guard against development of stomal stricture.

The question of bowel habit is one for continuing debate. Some patients insist on a daily evacuation, and if they do I believe it wise to allow them this freedom, since it benefits them psychologically. Others refuse enemas after their initial hospital stay and, surprisingly enough, a few in this group maintain excellent control of evacuation and experience no episodes of incontinence. Still others develop a lazy attitude with irregular and infrequent cleansing of the bowel. These last will eventually be the dissatisfied patients who complain of poor control. Each patient must have individual counsel and management.

In regard to colostomy bags, I tend to discourage their use, even in the early postoperative phase. Their use seems to encourage an innate dependency on their presence, and my opinion is that the patient should be educated from the beginning regarding the sensation of impending colostomy evacuation. Most of these patients will be dismissed from the hospital wearing a simple protective dressing, from which they gradually progress to a cellucotton pad with an elastic abdominal support or girdle for permanent use. These patients will express great pride and a sense of accomplishment in their ability to control their colostomies without fear of embarrassing accidents.

There is little need for additional comments on the postoperative care emphasized by Dr. Kohn or on Dr. Stewart's description of surgical procedures. I would simply admonish the surgeon that, in creating a colostomy, he has performed a mutilating operation and that he is morally obligated to exert every effort in the rehabilitation of his patient.

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Diseases of the ESOPHAGUS

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THE APPARENT DISINTEREST in the study of the esophagus in the past accounts in part for the sparsity of knowledge that has evolved relative to the pathophysiologic, clinical, diagnostic, and therapeutic aspects of esophageal diseases. This lack of interest has been difficult to comprehend, especially since the esophagus is one of the more accessible internal organs and lends itself readily to study by both direct and indirect technics.

Through the coordinated efforts of the radiologist, surgeon, laryngologist, and internist and utilization of fluoroscopy, x-ray, esophagoscopy, and the newer surgical technics, impetus has been given to the study of the esophagus and its diseases. The radiologist has clarified, through various technics, certain aspects of esophageal anatomy and physiology. The surgeon, by formulating a practical thoracic approach, has made rapid improvements in surgical technics. The surgical technics, in part, have advanced far ahead of the understanding of the organ and its diseases. The internist with special interest in gastroenterology and endoscopy has contributed clinical, diagnostic, and therapeutic information pertaining to the esophagus and its diseases and has assisted in the preoperative and postoperative management of the patient who requires surgical intervention.

Classification of esophageal diseases

For this presentation I have classified the more common diseases of the esophagus according to type:

1. Neuromuscular: achalasia (?) or cardiospasm (?), dysrhythmia, corkscrew or curling esophagus
2. Inflammatory: esophagitis, peptic ulcer
3. Obstructive: strictures, webs, tumors
4. Vascular: varices.

Diagnostic study in any esophageal disease should include:

1. History
2. Physical survey
3. X-rays
4. Esosphagoscopy
   a. Biopsy
   b. Aspiration cytologic study
5. Laboratory studies.

Neuromuscular disturbances

The chief function of the esophagus is conveyance of food and liquids into the stomach. The efficiency of this function in part is dependent upon peristaltic action, myotonus, sphincteric status, and body position.

Disturbed esophageal function occurs with intrinsic changes affecting musculature;[1] intrinsic disturbances involving Auerbach's or Meissner's plexus;[2-7] emotional, psychosomatic, and reflex mechanisms with resultant hypertonic changes; disease states resulting in altered function; changes involving the cardiac sphincter; circulatory changes;[8] and changes resulting from bulbar disease.[9]

Awareness of normal function and these aspects of dysfunction are important to the internist and surgeon confronted with the problem of dysphagia. In addition, an understanding of the present-day conception of esophageal anatomy is important (Fig. 1). Lerche,[10] through his roentgen studies, has contributed greatly to the clarification of the anatomic understanding of the very important terminal esophagus or the gastroesophageal segment of expulsion; others[11-13] have made confirmatory studies.

The esophageal sphincters are part of the gastroesophageal segment, which includes the inferior esophageal sphincter with the ampulla above and the gastroesophageal vestibule with the constrictor cardiae below. There is one common attachment, the phrenoesophageal elastic membrane arising from the inferior aspect of the diaphragm and inserting into the esophagus at the level of the inferior esophageal sphincter above and into the cardia of the stomach below.

Clinically, the various neuromuscular disorders of the esophagus produce similar symptomatology. The degree and extent of the complaints depend upon the duration of the condition. The chief complaints of patients with neuromuscular esophageal disturbances are dysphagia; retrosternal tightness, fullness, and pressure; regurgitation; eventual anorexia, weight loss, and weakness; and associated respiratory symptomatology.

Cardiospasm or Achalasia.—The term "achalasia" implies inability of the muscular orifice to relax beyond the point of its normal resting tone—imperfect relaxation. Cardiospasm may be considered a persistent contraction beyond the normal resting tone—abnormal hypertonicity. The terms, clinically, have been used interchangeably with neither term implying gross or microscopic anatomic abnormality. Since there are no definitive clinical criteria differentiating two separate entities, in this discussion I will use the term "cardiospasm."

In addition to the previously mentioned complaints common to the patient with neuromuscular esophageal disturbance, the following serve as differential criteria for the diagnosis of cardiospasm: These patients experience much more difficulty with solid foods than with liquids. The pressure necessary to overcome the resistance in the esophagus is seemingly rather constant, and when intraluminal pressure exceeds the pressure of resistance, the lower esophagus and a portion of its contents enter the stomach. The patient becomes aware of this mechanism and soon is washing down his food with water.

X-ray studies usually reveal rather marked dilatation of the esophagus. In response to obstruction near the cardia, the esophagus assumes a pyriform, fusiform, or sigmoid configuration. With the patient upright, fluoroscopy reveals the barium column to be maintained at a height of about 8 inches above the esophagogastric junction, irrespective of the amount of barium intake. The weight of the barium column at this level evidently overpowers the sphincter mechanism, and barium enters the stomach. Of patients with cardiospasm studied with a 1:1 mixture of barium and water, 85 per cent had abnormal esophageal retention at 3 minutes.[7] Urecholine, by its parasympathomimetic effect, seems to increase the degree of spasm in

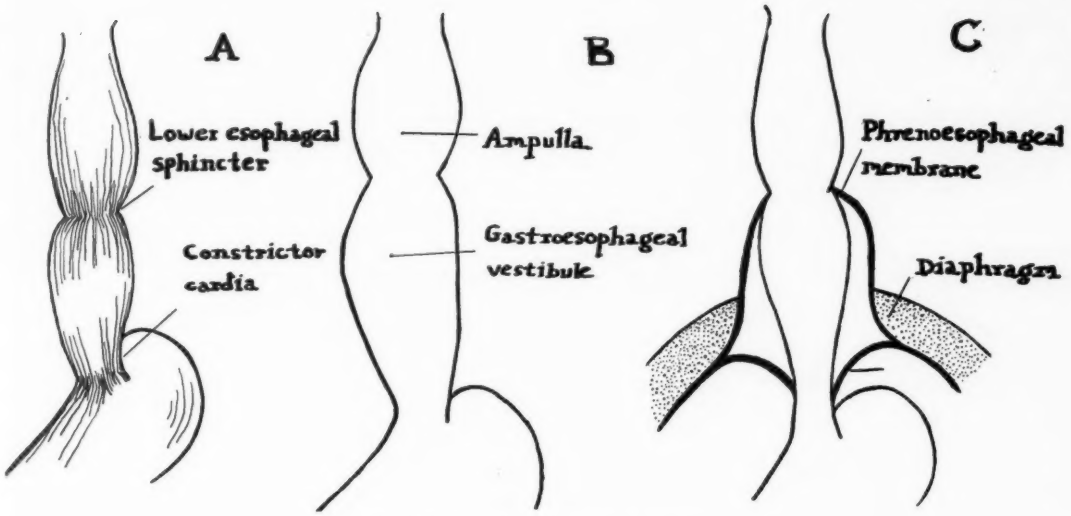

Fig. 1. Gastroesophageal segment of expulsion

cardiospasm, but Dibuline (parasympatholytic) relaxes the Urecholine-induced spasm.[7]

Cardiospasm is a difficult condition to treat, and the conservative approach, given a prolonged trial, is advisable. One may have to be satisfied with only fair results, and the greater the dilatation the less satisfactory the result.

The Heller procedure with or without pyloroplasty and/or vagotomy and cardioplasty have been the usual surgical approaches to cardiospasm. The results in many instances have left much to be desired.

Poor or fair results with conservative therapy may lead to the feeling that a more radical approach would yield a better result, but this decision should not be made without due deliberation and consultation. Further, unsuccessful surgical intervention could cause further disorganization of a regional mechanism, with persistent regurgitation, increased dysphagia, esophagitis, and a generally more uncomfortable patient than would unsuccessful medical therapy. Better understanding of the gastroesophageal phase of expulsion should be followed by the development of improved surgical technics.

A suggested therapeutic plan follows:

1. Transesophageal dilatations two to three times weekly
2. Periodic esophageal lavage, nightly in cases of marked dilatation
3. Liquid or soft diet
4. Nitroglycerin 0.4 mg. three times daily, sublingually, toward the end of the meal
5. Dibuline 7 to 15 mg. subcutaneously, 30 to 60 minutes before meals
6. Surgical consultation
7. General supportive measures.

Dysrhythmia.—Symptoms commonly complained of in association with dysphagia include substernal discomfort, burning, pain, regurgitation, or vomiting. Washing down food with water and weight loss are common complaints.[7]

X-ray studies reveal an average emptying time in these patients of 30 seconds. Other associated and pertinent x-ray findings are hiatus hernia, a frequent finding; constriction ring at the lower end of the esophagus; and irregular and disorganized peristaltic waves, often segmental.[7]

Therapy consists of correction of hiatus hernia when present, a bland diet, and Urecholine 5 to 10 mg. dissolved in water, 30 to 60 minutes before meals and at bedtime.

Corkscrew or Curling Esophagus. — Corkscrew esophagus constitutes a condition in which there are alternating contractions and dilatations due to multiple segmental spasticity. The lower half of the esophagus is usually involved, and the condition is more pronounced when the patient is prone.[14] Seemingly, older males are more prone to develop this syndrome.[15] Arteriosclerosis with resultant degenerative changes in the neuromuscular component is a most likely explanation.[8,16,17]

Nitroglycerin 0.4 mg. sublingually, during meals, Urecholine 5 to 10 mg., 30 to 60 minutes before meals, a bland diet, and maintenance of the upright position for several hours postprandially are valuable therapeutic measures. In addition, whatever supportive therapy necessary should be utilized.

Inflammatory diseases of esophagus

Esophagitis.—Esophagitis is readily diagnosed by esophagoscopy in the presence of macroscopic evidence.

In primary esophagitis a reflux of the gastric contents into the esophagus is the basic cause. The most common associated abnormality is hiatal hernia.[18-21] Other etiologic factors in the production of primary esophagitis are trauma, ingestion of caustic substances, cardiospasm, excessive emesis, prolonged intubations, and associated gastroduodenal ulcer.[22]

The clinical picture varies from mild dysphagia and upper gastrointestinal distress to severe pain, malnutrition, and varying degrees of hemorrhage.

The more simple types of esophagitis, into which the majority of cases fall, should be treated conservatively:

1. Bland soft diet
2. Bismuth subcarbonate, 2 grams, 2 hours after meals and at bedtime

3. Aluminum gels
4. Sedation
5. Tetracaine hydrochloride 1 per cent; procaine 1 per cent; Xylocaine
6. Transesophageal dilatations as indicated
7. Surgical interventions should be considered in certain instances:

a. In undilatable stricture, radical resection in addition to pyloroplasty or gastroenterostomy is the procedure of choice.

b. In marked, primary hyperacidity, subtotal gastrectomy with vagotomy and resection should be performed.

c. Hiatus hernia should be repaired when it is the cause of esophagitis.

Chemically produced esophagitis is usually the result of the ingestion of lye. As a rule it is ingested unknowingly by children or for the purpose of suicide by adults. Considerable progress has been made in the therapy of chemical burns of the esophagus. The use of antibiotics in combating infection, a factor in stricture formation, and the utilization of cortisone to inhibit fibroplasia and stricture formation[23-25] are important additions to the treatment of chemical burns of the esophagus.

The primary phase of treatment consists of placing a Kaslow tube in situ, administration of penicillin and steroids, and general supportive measures.

The secondary phase consists of removal of the Kaslow tube after 72 hours, if the condition permits, following which esophagoscopy is performed and repeated in 2 weeks. Dilatation is also performed after 72 hours, with a mercury-filled rubber bougie. A no. 14F is used initially, the size being gradually increased to a no. 28F. Dilatation should never be forcible. If blood appears on a bougie, dilatation should be discontinued for 24 hours. The esophagus should be dilated daily for 2 weeks, at which time it should be possible to use a no. 36F bougie. No larger bougie should be used if the patient is a child 10 years of age or younger. At each dilatation the largest bougie should be left in situ for 15 minutes.

After 3 to 4 weeks, dilatation is performed every other day, and after 5 to 6 weeks, it is done twice weekly for 2 to 3 weeks. Thereafter the esophagus is dilated as indicated once weekly for 6 months and once monthly for 6 years. Endoscopy is performed periodically.

Secondary esophagitis results from stasis, and it is usually associated with a tumor, ulcer, cardiospasm, or benign stenosis. Therapy is supportive and symptomatic with specific measures directed toward the primary mechanism.

Peptic Ulcer of the Esophagus.—Peptic ulcer of the esophagus is comparatively rare, comprising 1.5 per cent organic esophageal and pharyngeal disease.[26] Reflux of an acid pepsin mixture into the esophagus, production of esophagitis, and progression to ulceration and to benign stricture are thought by some to constitute the sequence of development.[27] Others[28] believe mucosal trauma is necessary for the development of ulcer. Aberrant gastric mucosa is commonly found in the esophagus and, in the presence of a reflux acid-pepsin mixture, could lead to the development of peptic ulceration.

Low retrosternal pain with intrascapsular radiation is a chief complaint. The pain is intensified after the intake of food or liquid, especially when the patient is prone. Pressure exerted over the left hypochondrium has a tendency to aggravate the pain.

A delay in the passage of the opaque meal during x-ray studies, simple segmental spasm, true stenosis, mild proximal dilatation, abnormal peristalsis, and evidence of mucosal thickening may be considered important indirect signs of esophageal ulcer. Actual visualization of an ulcer crater roentgenographically is rare.[29-31]

Esophagoscopy should be performed when peptic ulcer is suggested by clinical appraisal. Biopsy and aspiration cytologic studies are also utilized.

Improved surgical technics based on a better understanding of the advantages of a definitive surgical approach are establishing surgery as the treatment of choice in peptic ulcer of the esophagus. Adjunctive medical measures may be utilized in the period preceding surgery.

Medical treatment includes a bland diet; aluminum gels, bismuth subcarbonate, et cetera; and transesophageal dilatations in the presence of stricture, to prevent stricture, and for symptomatic relief in the presence of probable secondary segmental spasm.

General supportive therapy consists of antibiotics as indicated, fluids, and transfusions.

Surgical procedures include early subtotal gastrectomy[27] and gastroenterostomy with vagotomy.

Obstruction of the esophagus

Strictures.—A stricture is the result of a segmental fibrous contracture in the wall of the esophagus, and fibrosis is a late manifestation of regional tissue destruction and repair. Stricture formation results from an acute or chronic inflammatory process, primary or secondary, or from trauma. Esophageal strictures are not common.[32]

Complications are likely to occur and may result from incarceration of food particles, foreign bodies, proximal dilatation, and malnutrition due to progressive occlusion of the esophageal lumen. A benign fibrous stricture is a precancerous lesion.[33-35] Like other obstructions of the esophagus, it may be responsible for overflow tracheobronchial aspiration and chronic pulmonary disease. Concomitant cicatricial esophageal shortening due to progressive stenosis is likewise a possible complication of esophageal stricture.

Webs.—Webs are merely thin membranous strictures consisting only of the mucosal and submucosal coats of the esophagus and not rarely are a cause of dysphagia. Most webs are encountered in women. They are found in the cervical portion of the esophagus and usually arise from the right posterior wall. Occasionally they are congenital but most frequently they are sequelae of local infection, hemorrhage, erosion, ulceration, or mechanical trauma.

Therapy.—Simple strictures and webs require only transesophageal dilatation. In complicated strictures measures for restoration of continuity consist of use of an external esophagus with a skin or presternal intestinal tube, resection with end-to-end anastomosis, by-passing or replacement of the esophagus with an intestinal tube, resection of the esophagus with esophagogastrostomy, esophagojejunostomy or esophagocologastrostomy, and use of a prosthesis as a palliative measure.[36,37]

Tumors.—Benign esophageal tumors, usually papillomas, mucosal polyps, and adenomatous tumors, are rare.[38,39] The epithelium of the esophagus behaves neoplastically as does epithelium elsewhere in the body. Benign tumors originating there may well be considered precancerous.

Therapy consists of surgical removal, via a trans-

thoracic or transcervical approach, depending on the location of the lesion.

Carcinoma of the esophagus is found to be present in about 7 per cent of patients who die of carcinoma.

Dysphagia is the most important symptom, the most common, and usually the initial complaint. It is most significant, for cases amenable to surgical cure must be diagnosed when dysphagia is the only complaint. The brilliant improvements in surgical therapy are dulled because so often the diagnosis is not established during the period of resectability.

Dysphagia may be described by patients in several ways, such as food sticking, a lump hindering the passage of food, a sensation of pressure building up during a meal, or simple substernal fullness. Intermittency and variations in the severity of distress are usual. In a patient complaining of dysphagia, even though the complaint is mild or vague, roentgenologic and esophagoscopic surveys should be obtained.

Symptoms of obstruction with overflow manifestations occur in varying degrees during the course of the illness. Regurgitation is a common complaint but may occur only nocturnally. Substernal, epigastric, and midback pain are usually late complaints. Hoarseness, which may be intermittent, occurs with involvement of the recurrent laryngeal nerve. Cachexia is a terminal symptom, varying of course with the degree of obstruction and type of carcinoma.

The methods initially outlined are to be applied in the diagnosis of esophageal tumor, especially x-ray, esophagoscopy with biopsy, and aspiration cytologic studies. The initial biopsy may not establish the diagnosis, and serial biopsy should then be performed. Failure might be due to encountering the most proximal border of the tumor, in the presence of any degree of obstruction, or because the proximal extension is encompassed by a border of simple epithelial hyperplasia, or the proximal edge is buried under relatively normal or edematous mucosa. All efforts are directed toward preparing the patient for surgical removal of the tumor. The status of the cardiorespiratory system, blood, electrolytes, protein, nutrition, and fluid and acid-base balances should be determined preoperatively, and whatever steps necessary should be taken to correct any deficiencies. Esophageal lavage should be performed prior to operation.

Postoperatively, supportive therapy consists of administration of oxygen or intermittent positive pressure breathing, because of the tendency in these patients to develop atelectasis, pulmonary edema, and pleural effusion. A double-lumen tube is left in situ for gastric aspiration and jejunal feeding, and a fluid balance sheet should be maintained.

Postoperative laboratory procedures include serial complete blood counts, eosinophil counts, urinalysis, and determination of hematocrit, total protein, nonprotein nitrogen, and electrolyte levels and the albumin-globulin ratio and acid-base balance. Electrocardiographic and chest and flat abdominal x-ray studies should be obtained as indicated.

Following removal of the tumor, the patient should be closely observed for early evidence of cardiac, pulmonic, and gastrointestinal complications. If necessary, parenteral fluids, whole blood, and packed cells should be administered.

Therapy in the inoperable case is palliative and consists of transesophagoscopic dilatations and intubation in order to maintain a lumen and deep radiation therapy with concomitant administration of testosterone propionate.[40] Gastrostomy may have to be utilized.

Vascular affections

Varices.—Brilliant surgical advances are being made in the treatment of varices due to hepatic cirrhosis.

The clinical work-up should include the history and physical survey; x-ray studies; esophagoscopy (the most efficient means of diagnosis); gastroscopy; biochemical and laboratory appraisals, including hepatic and renal function tests, a complete blood count and thrombocyte count, determination of the prothrombin time, and evaluation of the cardiopulmonary status.

In acute hemorrhage of esophageal varices, treatment consists of general supportive measures and specific measures such as tamponade with a double-balloon triple-lumen tube (Sengstaken-Blakemore) or a single-balloon triple-lumen tube (Nachlas). Esophagoscopy should be performed, and Oxycel packed around an in situ esophageal tube. Sodium morthuate, 5 per cent, is injected into the varices. Thoracotomy may be required in an emergency.

Certain surgical procedures may be used prophylactically. These include ligation of the splenic artery; splenectomy; portacaval shunt; devascularization of the distal esophagus in addition to splenectomy, vagotomy, and gastroenterostomy as indicated; hepatic artery ligation with or without adjunctive splenic artery ligation; and splenorenal shunt.

Surgery is the therapy of choice for varices, whether or not hemorrhage occurs, providing the patient's status warrants the procedure, which in turn is determined by the condition of the liver and the general hematologic status. The most likely postoperative complication is thrombosis.

The effectiveness of the surgical procedure utilized for the reduction of portal hypertension may be appraised if water manometric pressures are determined preoperatively and postoperatively. These are obtained through the esophagoscope from the first portion of the first varix encountered as the instrument is introduced.

Conservative treatment of esophageal varices is by injection of sclerosing solutions; 5 ml. of 5 per cent of sodium morrhuate are injected into the distal aspect of the varices every 4 to 7 days. Injection treatment is indicated in the patient who has had unsuccessful operative portal decompression, that is, the varices continue to bleed; as a routine adjunct in those cases in which simple splenectomy has been the surgical procedure; and in the patient whose hepatic or general status will not permit a major surgical procedure. Injection treatment is contraindicated in the presence of gastric varices. Esophagoscopy and gastroscopy should be utilized in the patient with cirrhosis so that the vascular status of the stomach and the esophagus are known to the physician.

Conclusions

With the continued, combined, cooperative efforts of the radiologist, surgeon, and internist, further contributions to the understanding of esophageal diseases are to be expected in the future. An increased knowledge of the anatomic and clinical characteristics of esophageal diseases will mean improved clinical judgment in the application of therapy.

201-211 West Monument Bldg.

References

1. Ingelfinger, F. J., Kramer P., and Sanchez, G. C.: Gastroesophageal vestibule, its normal function and its role in cardiospasm and gastroesophageal reflux. Am. J. M. Sc. 228:417-425, Oct. 1954.

2. Rake, G. W.: Pathology of achalasia of cardia. Guy's Hosp. Rep. 77:141-150, April 1927.

3. Lendrum, F. C.: Anatomic features of cardiac orifice of stomach,

with special reference to cardiospasm. Arch. Int. Med. 59:474-511, March 1937.
4. Etzel, E.: Megaoesophagus and its neuropathology; clinical and anatomo-pathological research. Guy's Hosp. Rep. 87:158-174, April 1937.
5. Cross, F. S.: Pathologic changes in megaesophagus (esophageal dystonia). Surgery 31:647-653, May 1952.
6. Kramer, P., and Ingelfinger, F. J.: Esophageal sensitivity to mecholyl in cardiospasm. Gastroenterology 19:242-253, Oct. 1951.
7. Lorber, S. H., and Shay, H.: Roentgen studies of esophageal transport in patients with dysphagia due to abnormal motor function. Gastroenterology 28:697-716, May 1955.
8. Putney, F. J., *et al.*: Bronchoesophagology; summaries of bibliographic material available in field of otolaryngology for 1952. Arch. Otolaryng. 58:448-494, Oct. 1953.
9. Madsen, E.: Dysphagia in bulbar and pseudobulbar lesions simulating oesophageal carcinoma. Acta radiol. 41:517-524, June 1954.
10. Lerche, W.: Esophagus and pharynx in action. Charles C Thomas, Springfield, Ill., 1950.
11. Ingelfinger, F. J., and Kramer, P.: Dysphagia produced by contractile ring in lower esophagus. Gastroenterology 23:419-430, March 1953.
12. Palmer, E. D.: Attempt to localize normal esophagogastric junction. Radiology 60:825-831, June 1953.
13. Poppel, M. H., *et al.*: Closing mechanism of lower esophagus in man; radiological study of five hundred unselected patients. J. Am. M. A. 161:196-198, May 19, 1956.
14. Ismay, G.: Painful spasm of oesophagus ("corkscrew" oesophagus). Brit. M. J. 2:697-698, Sept. 27, 1952.
15. Feldman, M.: Appraisal of changing concepts in diagnosis and treatment of esophageal diseases; review of literature. Gastroenterology 30:929-942, June 1956.
16. Carlson, A. J.: Local spasm of esophagus and impairment of deglutition, following local injury to pharyngeal and esophageal mucosa. J. Am. M. A. 78:784-786, March 18, 1922.
17. Fugazzola, F.: L'esofago a cavaturacciolo. Ann. radiol. diag. 27:55-68, 1954.
18. Creamer, B.: Oesophageal reflux and action of carminatives. Lancet 268:590-592, March 19, 1955.
19. Hoover, W. B.: Esophagitis: clinical evaluation. Ann. Otol. Rhin. & Laryng. 61:1148-1158, Dec. 1952.
20. McHardy, G.: Regurgitant esophagitis. Am. Pract. & Digest Treat. 5:630-635, Aug. 1954.
21. Winkelstein, A., *et al.*: Peptic esophagitis with duodenal or gastric ulcer. J. Am. M. A. 154:885-889, March 13, 1954.
22. Boyd, D. P.: Esophagitis, hiatus hernia, and cardiospasm; surgical considerations. Arch. Int. Med. 96:724-730, Dec. 1955.
23. Floberg, L. E., and Koch, H.: Effect of cortisone on scarification in corrosive lesions of esophagus. Acta oto-laryng. Suppl. 109:33-48, 1953.
24. Weisskopf, A.: Effects of cortisone on experimental lye burn of esophagus. Ann. Otol. Rhin. & Laryng. 61:681-691, Sept. 1952.
25. Dagradi, A. E., and Stempien, S. J.: Cortisone, corticotropin and procaine in treatment of corrosive esophagitis. California Med. 81: 33-34, July 1954.
26. Macmillan, A. S.: Statistical study of diseases of oesophagus. Surg. Gynec. and Obst. 60:394-402, Feb. (no. 2A) 1935.
27. Cornell, A., and Winkelstein, A.: Partial gastric resection for peptic ulcer of esophagus. Case report, review of literature, remarks on pathogenesis and treatment. Gastroenterology 16:720-725, Dec. 1950.
28. Friedenwald, J., Feldman, M., and Zinn, W. F.: Ulceration of esophagus; experimental study. Arch. Int. Med. 42:521-532, Oct. 1928.
29. Allison, P. R.: Peptic ulcer of oesophagus. Thorax 3:20-42, March 1948.
30. Steiner, G.: Chronic ulcerative oesophagitis with report of case of ulcer in oesophageal varices. Brit. J. Radiol. 19:145-152, April 1946.
31. Thomsen, G.: Peptic ulcer of oesophagus. Acta radiol. 32:193-209, 1949.
32. Benedict, E. B., and Sweet, R. H.: Benign stricture of esophagus with special reference to esophagitis, hiatus hernia, esophageal ulcer, and duodenal ulcer. Gastroenterology 11:618-628, Nov. 1948.
33. Benedict, E. B.: Carcinoma of esophagus developing in benign stricture. New England J. Med. 224:408-412, March 6, 1941.
34. Benedict, E. B.: Benign stricture of esophagus. Gastroenterology 6:328-329, April 1946.
35. Redish, M. H.: Benign esophageal stricture and carcinoma of esophagus. U. S. Armed Forces M. J. 1:447-448, April 1950.
36. Leahy, L. J.: Editorial: Caustic burns of esophagus. Surg. Gynec. & Obst. 98:631-633, May 1954.
37. Bosher, L. H., Jr., Decker, A. M., Jr., and Harrison, J. M.: Esophageal reconstruction by esophagojejunostomy and esophagocologastrostomy; with special reference to lye strictures. South. M. J. 48:105-113, Feb. 1955.
38. Moersch, H. J., and Harrington, S. W.: Benign tumor of esophagus. Ann. Otol. Rhin. & Laryng. 53:800-817, Dec. 1944.
39. Cleland, J. B.: Pathological lesions met with in oesophagus during post mortem examinations. M. J. Australia 1:588-589, May 5, 1934.
40. Graham, R. M., and Graham, J. B.: Cellular index of sensitivity to ionizing radiation; sensitization response. Cancer 6:251-223, March 1953.

Additional references

Bockus, H. L.: Gastroenterology. W. B. Saunders Co., Philadelphia, 1944, vol. 1.
Palmer, E. D.: Esophagus and its disease. Paul B. Hoeber, New York, 1952.
Vinson, P. P.: Diagnosis and treatment of diseases of esophagus. Charles C Thomas, Springfield, Ill., 1940.
Winkelstein, A.: Diseases of gastrointestinal tract. Oxford University Press, London, 1942.

ESOPHAGEAL SURGERY

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THE PURPOSE OF THIS discussion is to review problems of esophageal surgery and to project practical points in this field.

Diverticula.—Pulsion diverticulum of the cervical esophagus frequently requires excision. The diverticulum is commonly deflected toward the left, and exposure is accomplished by means of an anterior sternocleidomastoid approach. Cuff excision is preferable to invagination. The defect is closed with an inversion suture of the mucosa and approximation of the muscularis. Drainage should be instituted in all cases.

Traction diverticulum of the midthoracic esophagus seldom requires surgical intervention, but in those instances when operation is necessary, a barium survey will dictate the logical site for thoracotomy. The method of resection essentially parallels that of the pulsion type. The site of closure should be reinforced with a flap of pleura.

Chemical (Caustic) and Inflammatory (Peptic) Strictures.—A relatively high percentage of strictures due to caustics respond to direct or retrograde dilatation. Residual stenosis may require resection and esophagogastrostomy. In peptic esophagitis, a persistent stricture, 3 to 4 cm. in length, may be resected and end-to-end anastomosis performed. Lesions of greater extent and those involving the abdominal esophagus must be completely resected and continuity established by esophagogastrostomy.

Perforation.—Perforation due to ingestion of foreign bodies, instrumentation, retching, or vomiting may be cervical or thoracic. In cervical perforations incision is made on the side of the perforation and the method is that utilized for diverticula in this region. Infected areas must be drained before the perforation can be closed. Early ruptures of the thoracic esophagus are treated by thoracotomy and primary closure or by limited resection and anastomosis. In late intrathoracic perforation, infected regions should be drained by means of extrapleural posterior mediastinotomy, resecting two or three short rib segments paraspinally and reflecting the pleura laterally.

Hemorrhaging Varices.—The occasional case which is refractory to tamponade with a Sengstaken-Blakemore esophageal balloon may require transthoracic esophagotomy and direct ligation of the varices. These may be obliterated with a segmental or running suture. Esophagogastrectomy is a formidable procedure to select for such poor-risk patients.

Achalasia or Cardiospasm.—When distal esophageal obstruction does not respond to endoscopic dilation, it should be relieved by cardioplasty. A vertical in-

cision is made through the constricted area and the resultant defect closed transversely in two layers. Postoperative esophagitis is attenuated by improvising a diaphragmatic sphincter above the anastomosis. The perils of vagotomy are avoided in this operation.

Obstructive Web or Ring.—An esophageal web is a thin-walled, weblike perforate diaphragm of the distal esophagus which may be obscure to esophagoscopy and even direct palpation. Suggestive clinical and radiographic findings warrant performance of esophagotomy and digital exploration. When the web is encountered three cuneiform sections are removed from its circumference and the remaining free margins closed with interrupted sutures. A conical dependent web may be rendered accessible by means of fundal gastrotomy and upward invagination into the esophageal field with the finger.

Congenital Esophageal Atresia and Tracheoesophageal Fistula.—Immediate surgical intervention is imperative when this defect exists in the newborn. Thoracotomy is performed through the right fourth intercostal space. Mediastinal exposure is enhanced by section of the azygos vein. The proximal esophageal segment is readily identified following obturation with a catheter. The fistula is divided at the membranous portion of the distal trachea and either ligated or closed with interrupted sutures. I prefer establishing patency of the upper esophageal segment by means of a matched transverse incision of its apex, rather than a buttonhole incision. Meticulous end-to-end anastomosis is then fashioned by six or more 5-0 silk sutures. This union should be reinforced where possible by a pleural flap and tension relieved by tacking the superior segment to the prevertebral fascia.

Hiatus Hernia.—Left thoracotomy is performed by way of the seventh rib, and the distal esophagus is mobilized and encircled by a Penrose drain. The peritoneal sac may be left intact. A long forceps is passed through a small stab incision in the dome of the left diaphragm, the peritoneum of the hiatus is pierced, and the affixed rubber drain grasped and withdrawn from the diaphragm. Subsequent traction will maintain reduction of the stomach. The crura are cleared of areolar tissue and peritoneum. The esophagus is advanced to the ventral margin of the hiatus and the crura approximated with several heavy silk sutures. The most posterior should be a triangular stitch including the prevertebral fascia. To avoid constriction, the most anterior must be tied against a finger inserted through the hiatus. The esophagus is then anchored to the hiatal margin by three or four fine silk sutures. Positioning the hiatus toward the dome of the diaphragm compensates for the occasionally encountered short esophagus.

Tumors.—Benign pedunculated intraluminal tumors can be attacked by esophagotomy and transection of their pedicles. The majority of intramural tumors are enucleated and the mucosa preserved.

Malignant neoplasms constitute about 4 per cent of gastrointestinal cancer, or 10 per cent if lesions arising in the cardia of the stomach are included.[1] Most malignant tumors are situated below the aortic arch. Resection with extirpation of mediastinal lymph nodes and restoration of continuity by anastomosis with the mobilized stomach assures the optimum prognosis. This procedure necessitates sacrifice of the distal esophagus, the extent being proportionate to the level of the pathologic process.

In lesions contiguous to the arch, the proximal segment is best delivered anterior to the aorta for end-to-side esophagogastrostomy. Palliative resection in many apparently inoperable tumor obstructions is preferable to gastrostomy for obvious reasons. Only localized noninvasive esophageal neoplasms of the neck and thoracic inlet should be resected because of the high morbidity and problems concerned with repair of the defect.

Pertinent Factors in Resection and Anastomosis.—Because of the short segmental vascular supply, dissection and mobilization of the esophagus must be limited to 3 or 4 cm. from the points of transection. Therefore, it is apparent that end-to-end anastomosis is infrequently performed. Resection should include 4 to 5 cm. of normal esophagus as well as the diseased area and necessitates sacrifice of the distal portion of the esophagus with anastomosis of the advanced thoracic stomach to the upper segment. I prefer end-to-side esophagogastrostomy, using a transverse linear incision in the anterior gastric body or fundus for the stoma. This method insures greater reflex valve action than excision of a circular gastric buttonhole and less potential leakage than employing a portion of the closed proximal stomach for end-to-end union.

Anastomosis is performed by the two-layer technic with fine cotton or silk interrupted sutures, the knots of the inner layers being tied within the lumen. It is essential that all tension on the anastomosis be relieved by suturing it to adjacent fascia or pleura. Utmost gentleness must be exercised in manipulating the superior esophageal remnant. Atraumatic forceps and guide sutures may assist in this respect. All tissue on which crushing clamps have been applied is excised. Incomplete closure of the mediastinal pleura and negative pressure thoracostomy are mandatory. Pyloroplasty may be required to overcome delayed gastric emptying due to concomitant vagotomy in distal esophageal resection.

Prosthesis.—I have not employed cutaneous tunnels or pedunculated jejunal segments in the repair of esophageal defects. Neither seems physiologically or surgically satisfactory. Berman[2] devised an operation in which a polyethylene tube replaces the excised esophageal segment. In the near future, such operations may be the solution to a perplexing problem. I have not performed this operation and, therefore, I cannot evaluate it.

Complications of Surgery.—In addition to the general complications of thoracic surgery, hemorrhage, leakage, and obstructive phenomena are likely to occur in esophageal operations. Hemostasis is most important. Bleeding is readily recognized if tubes of sufficiently large caliber are used for thoracostomy. Postoperative hemorrhage responds only to re-entry and ligation of the offending vessels. Erosion of the anastomosis because of prolonged intubation and stomal dehiscence occurs infrequently. Minimal leakage may respond to conservative management. More profound spillage requires reanastomosis.

Coincidental surgical trauma to the thoracic duct and the occurrence of chylothorax present an obstinate enigma in which ductal ligation is indicated. Mediastinal abscess is uncommon if adequate drainage is permitted.

Obstruction following esophagectomy may occur at the stoma, hiatus, or pylorus. Stomal stenosis is invariably corrected by endoscopic dilatation. Proper tailoring of the hiatus about the stomach or esophagus will prevent constriction by torsion or angulation. Pyloroplasty will overcome the gastric atony of vagotomy, and distal subtotal gastrectomy will obviate outlet ob-

struction due to coexistent occlusive disease.

Summary

Some of the problems of esophageal surgery have been reviewed. Operations for certain pathologic conditions of the esophagus have been mentioned, and reference has been made to some operative and postoperative complications of esophageal surgical procedures.

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References

1. Lindskog, G. E., and Liebow, A. A.: Thoracic surgery and related pathology. Appleton-Century-Crofts, New York, 1953.
2. Berman, E. F.: Experimental replacement of portions of esophagus by plastic tube. Ann. Surg. 135:337-343, March 1952.

Additional references

Johnson, J., and Kirby, C. E.: The chest. Year Book Publishers, Chicago, 1952.

Sweet, R. H.: Thoracic surgery. Ed. 2. W. B. Saunders Co., Philadelphia, 1954.

The INTERNIST'S role on the SURGICAL team

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IN MANY GEOGRAPHICAL areas, our profession is altogether without the services of an internist; in other areas his services are misused; and in still others his services are unused. I accepted the assignment of this topic not as a task of enumerating clinical situations in which the internist can be of help, but as an opportunity to emphasize the importance of the internist's participation, not necessarily on the surgical team, but on a team of physicians and surgeons dedicated to the safe and successful conduct of a patient through his illness. Any hospital patient has every right to expect all possible skill to be used in his case, and the hospital governing board and administration have assumed the responsibility of making it available to him. The skilled team which serves him should consist of family physician, surgeon, radiologist, anesthesiologist, pathologist, internist, and such others as an individual case may dictate.

What is an internist? A simple definition would be "a doctor who practices internal medicine"; but both of these terms, "internist" and "internal medicine," are nebulous and ever since their inception have defied definition.

Osler[1] had this to say:

> I wish there were another term to designate the wide field of medical practice which remains after the separation of surgery, midwifery and gynaecology. Not in itself a specialty (though it embraces at least a half a dozen), its cultivators cannot be called specialists, but bear without reproach the good old name physician, in contradistinction to general practitioners, surgeons, obstetricians and gynaecologists.

How do these specialties and subspecialties of which we are a part come into being? They are products of evolution. When the mass of knowledge and technic in a given area grows so large that it can no longer be assimilated by the general practitioner, it is allocated to a certain group who will make the necessary sacrifices to master it. Surgery became a specialized branch of medical practice early because anatomy, the first of the basic sciences to expand rapidly and supply an abundance of information, required the full attention of those men who were interested in developing technics for the correction of pathologic anatomy. The application of surgical knowledge was nevertheless hindered until physiology and pharmacology provided the necessary knowledge for anesthesiologists to evolve as a specialty group. It is this group, together with the advent of antimicrobial therapy, that has made it possible for surgery to broaden its scope of technical application.

Internal medicine was not born until physiology, bacteriology, biochemistry, and pharmacology, together with physical diagnosis and a knowledge of clinical medicine based on experience, formed a body of information requiring the full attention of anyone who would be familiar with it.

Pepper's[2] definition of an internist is, in my opinion, the best one that has been given:

> An internist is a physician fitted by a sound and applicable knowledge of the basic sciences, a continuing training in internal medicine, a familiarity with fields outside his own, and an intellectual rather than the manual or technical approach, to study, diagnose and treat the diseases of the field of internal medicine to which he strictly limits himself and to integrate with the knowledge of his own field that of the allied specialties.

Surgery and internal medicine, then, are the two major segments of the practice of medicine which have come into being as a result of evolving information provided by advances in the basic sciences. It is like a spectrum, at either end of which is a certain group of illnesses that beset mankind, which are cared for either by strictly surgical or strictly medical methods. However, in the center of this spectrum is a conglomeration which necessitates the pooling of skills and talents. In this area, it is impossible to designate the team as "surgical" or "medical"; actually it is neither.

In my opinion, the statement, "To assist in planning the therapeutic utilization of the technics of other special branches of medical and surgical practice in the care of [poor-risk] patients,"[3] accurately describes the internist's role on this team of physicians. The

growth of medical science in the last decade precludes the possibility that any one group of specialists can master it all. It becomes our responsibility to afford the patient all available knowledge and skill in planning the therapeutic approach. This requires teamwork.

A diagnosis based on history, physical and x-ray examinations, laboratory data, and indicated consultations must form the basis for choice of therapy. Adequate, inadequate, or overenthusiastic application of this choice determines the percentage of morbidity and mortality. For example, in certain acutely ill patients, such as one with perforated duodenal ulcer, there can be no unanimity as to whether conservative or radical treatment is better. The choice of treatment must be suited to the individual patient. Many argue that morbidity, though possibly not mortality, is increased by pursuing conservatism; others, with equally good arguments, claim that radical intervention carries higher morbidity and mortality. Decisions in such cases demand consultation between surgeon and internist. I am not referring here to hallway or telephone talks, but to a written request for and completion of a consultation, signed by the consultant and made a part of the patient's permanent record. This gives added assurance for the patient's full recovery in the shortest time, divides responsibility, and is important from a medicolegal standpoint.

The surgeon and anesthetist must estimate the risk in every patient undergoing major surgery, because surgical morbidity and mortality are directly proportional to the degree of risk involved. I emphasize here the role of the surgeon in this all-important phase because, in at least some parts of the country, it is customary for the surgeon to delegate to the internist the entire care of the patient, not only in the preoperative period but in the postoperative period as well, making himself only a surgical technician. This situation is not as it should be; the surgeon should keep abreast of advances in the clinical application of the basic sciences and share the responsibility of patient care, not relinquish it entirely. To relinquish it places the responsibility on one individual again, and this is not in the best interest of the patient.

It is important that the functional status of the cardiovascular system be determined. Frequently this requires more than an intern's routine examination, an electrocardiogram, and chest x-ray. Also pulmonary function, renal function, and the patient's general metabolic and nutritional status must be assayed. If these tests are efficiently carried out, they need not constitute an unreasonable increase in the patient's expense or unduly postpone surgical treatment. Not infrequently an underlying disease will be found that is a far greater detriment to the patient's health than the condition for which surgical treatment was contemplated.

Just as important as discovering an unsuspected underlying disease is the demonstration that a given complaint is of psychosomatic rather than organic origin. At this point it is opportune to condemn the current tendency to brand illnesses as *either* functional *or* organic; we must remember that both may exist in a patient at the same time. It is therefore necessary that the preoperative evaluation embrace the psychologic as well as the anatomic, physiologic, and pharmacologic patterns of the individual.

If abnormalities are pointed up as a result of an individualized evaluation, certain problems must be considered. Is surgery indicated, and what is the risk? Can the patient be improved as an operative risk? Is the contemplated surgical procedure justified in face of the risk involved—will it benefit the patient by lengthening his life or making him more comfortable? What complications may be anticipated on the operating table and in the postoperative period, and what respective roles do the surgeon, anesthetist, and internist play in avoiding and combating them? The preoperative evaluation should always be sufficiently detailed to provide a baseline from which to work postoperatively. All too often a consultant is called to assist in managing postoperative complications, only to find totally inadequate preoperative information. An extreme incident of this nature was a case of postoperative anuria for which the chart showed no routine urinalysis.

If the surgeon's preoperative evaluation shows that surgical treatment is indicated and that the patient is a good risk, I can see no conceivable role for the internist unless unforeseen complications arise. In this category of patients the surgeon and anesthetist assume full responsibility for the safety of the patient.

In all instances except those where the risk can be truthfully said to be excellent, I believe that the services of an internist are required. There are several categories of patients who must be considered poor surgical subjects, in whose care the internist should have a part:

1. Patients having had myocardial infarction within the 3 months preceding the contemplated surgery, or episodal coronary insufficiency in which exertional tolerance is limited to the extent that an individual is no longer able to engage in ordinary physical activity without experiencing distress, constitute a group from whom surgical treatment should be withheld except in the most exceptional circumstances.

2. Patients with congestive circulatory failure, with or without atrial fibrillation, should have surgery withheld until satisfactory compensation has been restored for 4 or 5 weeks. Depending upon the urgency for intervention, it may be necessary to accomplish as much as possible in a shorter period.

3. Calcific aortic stenosis and syphilitic coronary ostial stenosis are causes of sudden and unexpected death on the operating table and during the postoperative period, and this possibility should be considered before surgery is performed.

4. Any cardiac arrhythmia should be investigated to determine its basis. Ventricular arrhythmias particularly may be a prelude to ventricular tachycardia. Atrioventricular block, especially if complicated by Adams-Stokes seizures, necessitates very careful selection of anesthetic agents.

5. Patients with chronic pulmonary disease, whose ventilatory function is impaired, are poor surgical risks.

6. Patients with renal hypofunction, whether due to chronic glomerulonephritis, nephrosclerosis, chronic pyelonephritis, or hydronephrosis are also in the poor-risk category.

7. Dehydrated patients and those with electrolyte imbalance should be classed as poor risks.

8. The diabetic who is not intelligently and adequately controlled is in this category. In addition, even though under normal conditions good control is maintained by dietotherapy alone, the demands created by the illness aggravate the diabetes and the patient will require special corrective measures.

9. Patients with diminished circulating blood volume are poor risks. The blood count and hematocrit reading do not reflect the true hematologic status of

many patients, particularly elderly ones, since these tests only give information regarding the concentration of erythrocytes and hemoglobin per unit of volume. Therefore this measurement may be entirely normal in the presence of critically reduced blood volume.

10. Patients who are jaundiced or have chronic liver inadequacy are in the poor-risk group.

11. Patients with a predisposition to intravascular clotting are poor surgical risks. This situation is prevalent in Group 10 and is also common in carcinomatous, hyperlipemic, hypotensive, polycythemic, and previously thrombotic patients and also in those with abnormal preoperative anxiety. They tend to develop arterial occlusions due to thrombi and, perhaps even more important, develop venous thromboses and embolic phenomena on the fourth or fifth postoperative day.

12. The aged patient suffers some or all of the above conditions making him unsafe for surgery. The incidence of other major degenerative diseases increases with each year of life beyond the age of 50.

Why do the above clinical situations constitute poor surgical risks? Except in instances where excessive amounts of blood are lost or where the operative procedure is particularly shocking, I do not believe that morbidity and mortality in this sizable group can be attributed to the technical procedure. It is almost invariably due to anesthetic agents and methods. The poor-risk patient has a diminished ability to detoxify and eliminate potent anesthetic and sedative drugs. He tolerates anoxia, respiratory embarrassment, and hypotension very poorly. The patient who is aged or has been losing blood may go into shock from a critical reduction of circulating blood volume after losing even minor quantities at surgery. This explains the need for an accurate estimation of total blood volume before major surgical procedures.

After the elective poor-risk surgical patient has been evaluated preoperatively by the surgeon, anesthetist and, for purposes of discussion, the internist, findings and recommendations must be properly recorded. If surgical treatment is indicated and justified, notwithstanding the risk involved, it is the team's responsibility to see that the patient is in optimum condition. Anesthesia should be planned to provide the best possible working conditions for the surgeon and safety for the patient. The anesthetist should explain to the internist the action of the agents he intends to use and the effects of the methods he intends to employ. The internist, in turn, should inform the anesthetist of the physiologic reactions he can anticipate from the patient during anesthesia and in the immediate postoperative period instead of merely cautioning against hypoxia and hypotension. It is the duty of the surgeon to choose the procedure of least magnitude which will accomplish the desired benefit to the patient; perhaps gastroenterostomy could be substituted for subtotal gastrectomy, or cholecystostomy for cholecystectomy. In this regard, I believe that operations performed in stages have a very definite place in both elective and emergency surgery in poor-risk patients.

Early and accurate diagnosis is required for so-called emergencies in the poor-risk and any other patient. Included in the emergency category are complications of peptic ulcer such as hemorrhage and perforation, mesenteric vascular occlusion, ruptured abdominal aneurysm, gangrene of the extremities, acute cholecystitis, appendicitis, strangulated hernia, and intestinal obstruction. Except for instances of mesenteric vascular occlusion (when it can be diagnosed), strangulated hernia, and ruptured abdominal aneurysm, there is no uniform agreement that any of these constitutes a need for urgent intervention. Morbidity is high in these illnesses, however, and early recognition and consultation are imperative.

It is important to remember that we are not treating a disease, but a patient with a disease. For emergency patients, too, an appraisal of the cardiovascular, renal, and metabolic status and an estimation of blood volume are essential before determining if and when operative or nonoperative therapy will be instituted. If the patient is to be treated surgically, it is understood that the risk is greater than in elective surgery because preparation must be limited to adequate support for the diseased heart, restoration of lost fluids and blood, correction of acidosis, and an attempt to control sepsis with antibiotics. The physician is forced to forego his desire to achieve optimal conditions before operation. Once the patient goes to surgery, it is the surgeon's duty to employ the simplest procedure for control of the emergency. More definitive attention may be given at a later date when the patient is in better condition. Each case must be approached on its individual merit, after appraisal of the patient. In various localities these decisions often must depend on the quality and experience of the medical and surgical services available, but the principles involved are the same everywhere.

This concerted effort, this pooling of knowledge, experience, skills, and talents is what is meant by teamwork to provide adequate care for the poor-risk patient. There is no place here for dogmatism. The internist who permits catastrophic happenings because he refuses the assistance of a capable and well-trained surgeon must be held accountable, and so must the surgeon who proceeds with a questionable or poor-risk operation, calling for assistance from the internist only after complications develop. Any doctor, whether surgeon, internist, general practitioner, or obstetrician, who admits a patient to the hospital, is obligated to utilize all indicated and available assistance. If in the surgeon's judgment the services of an internist might be necessary at any time during the patient's hospitalization, the internist should be accorded the opportunity of seeing the patient preoperatively. Any doctor, seeing the need for assistance and division of responsibility, should unhesitatingly make the need known to the patient and his family.

Because of refusals to call for assistance for critically ill patients, either because of failure to recognize the gravity of the situation or because of dogmatism, the Bureau of Hospitals has found it necessary to institute a new requirement which reads as follows: "Consultation with a qualified consultant is required on all critically ill patients."[4] It is indeed unfortunate that the Bureau of Hospitals was forced to make mandatory the employment of consultation for critically ill patients, and I do not believe that this requirement points a finger at the surgeon any more than at the internist, general practitioner, or any other staff member. However, with this new requirement, two facts seem certain: The patient will reap the benefit, and the reputation of the hospital will be preserved in the community.

Hesitancy to conform to this regulation will arise for the same reason that we have been reluctant to utilize available assistance in the past; that is, because of the increased cost to the patient. The consultant, of course, has a right to expect the customary fee for

his services when the patient can afford it or, if the patient cannot afford it, a fee which is in proportion to that of the attending doctor. In spite of the fact that much of this work for the welfare of the patient is done in all institutions without charge, in most instances the patient is the one who must inevitably bear some additional cost. We must bear in mind, however, that postoperative morbidity is greatly reduced by correct preoperative preparation of the poor-risk patient. This lessened morbidity results in shortened hospital stays and reduction in the over-all costs.

If the philosophy of having a surgical team for management of poor-risk patients is correct, and if it is going to be necessary to make this team an integral part of every hospital staff, we face a great public relations problem. The real solution can be reached only at a local level, although a great deal might be gained through frank and forthright discussions between our specialty colleges. Efforts in this direction must be made soon.

Conclusions

It is my opinion that the role of the internist on the surgical team is to assist in evaluating the advisability of surgical treatment of the poor-risk patient and to assist in the preparation of the patient if operation is indicated. For the welfare of patients and hospitals, the practitioners of these two major branches of medical science, surgery and internal medicine, must be willing to relinquish some of their sovereign rights and embark on an era of deserved mutual respect and understanding. Only in this way can surgery be made safe for the patient and the patient safe for surgery. Only by teamwork can we make available to the poor-risk patient those curative and definitive surgical procedures which have heretofore been reserved for those in more happy circumstances.

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References

1. Osler, W.: Internal medicine as vocation, in Aequanimitas. Ed. 2. P. Blakiston's Son & Co., Philadelphia, 1922. p. 139.
2. Pepper, O. H. P.: What is an internist? Arch. Int. Med. 13:1791-1798, April 1940.
3. American Osteopathic Board of Internal Medicine: Booklet of information, 1955, p. 25.
4. American Osteopathic Association Bureau of Hospitals: Minimum standards for registered hospitals, July 1956, p. 7.

RADIOLOGIC aspects of BILE DUCT diseases

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THE FIRST CHOLANGIOGRAM was probably made by Reich[1] who reported in 1918 a case of a woman with a draining sinus, in whom an injection of bismuth and petrolatum partially outlined the biliary ducts.

It is much more surprising that the first practical method for visualizing the gallbladder was not devised until 1924, when Graham and Cole[2] first suggested the use of either an iodized or brominized tetracholorphenolphthalein for that purpose. It was later discovered that the intravenous route of administration caused thrombophlebitis in many cases. The oral administration of tetrabromophenolphthalein, as reported by Menees and Robinson[3] in 1925, also led to many side effects.

It was 1940[4] before an oral preparation with very few side effects was introduced in this country. Iodoalphonic acid (Priodax) replaced previously used preparations and was the agent of choice until only recently, when Telepaque (iodopanoic acid) and Teridax (triiodoethionic acid) were introduced. The latter two substances have a high iodine content and cast a dense gallbladder shadow. Some practitioners still prefer Priodax, feeling that pathology in the gallbladder may be masked by the radiopacity of the newer preparations; however, this has not been our experience.

Copleman and Sussman[5] indicated that the extrahepatic ducts might be visualized in man if a suitable meal were administered following cholecystographic examination. This method of common bile duct demonstration, even with high iodine content products, was certainly far from dependable in our experience.

In 1948, a report[6] was given concerning the visualization of the hepatic ducts, common duct, and gallbladder following the intravenous administration of o-(4-hydroxy-3,5-diiodobenzyl)-benzoic acid in dogs. The duct system was also seen after cholecystectomy. The substance had not been used on humans. In fact, a dependable and practical method of the visualization of the intrahepatic and extrahepatic biliary ducts without surgical intervention has been a remote possibility until recently.

In 1953, the Schering Corporation of Germany produced a new intravenous gallbladder medium, which they called Biligrafin,[7] and a more practical method of duct visualization became possible. This substance (sodium iodipamide) is known in this country as Cholografin. Cholografin Sodium is furnished in a 20 per cent solution of the disodium salt of N,N′-adipyl-bis-(3-amino-2,4,6 triiodo)-benzoic acid. It is a readily water-soluble powder, which has a molecular weight of 1183.35 and contains 64.32 per cent iodine. The iodine content, being firmly bound to the molecule, is not split off after injection into the blood.[8] Cholografin Methylglucamine, another form, has recently been introduced. This new material has twice the radiopaque iodine content of Cholografin Sodium.

Action

Cholografin, when intravenously administered, is carried to the liver where it is rapidly excreted. Large

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amounts of the substance appear in the bile in 10 to 15 minutes, and the gallbladder usually begins to fill about an hour after administration. About 10 per cent of the substance is normally eliminated by the kidneys,[9,10] and the remainder is eliminated in the feces without reabsorption.[10]

Technic

In our hospital, the patient is given castor oil the day before the examination is to be carried out. No food or water is allowed after midnight, and enemas are given in the morning.

The examination procedure is begun at 8:00 a.m. The patient is placed in a supine position with the left side elevated about 15 degrees, and a 10- by 12-inch scout film is exposed and checked. We employ a high ma. and low kv. technic for increased contrast.

The patient is questioned carefully for a history of allergy, and a test quantity of 1 cc. of Cholografin is administered intravenously. If no toxic effects are noted, the remainder of the dye is given over a 5- to 10-minute period, 20 cc. of Cholografin Methylglucamine being the routine dosage. Nausea can be eliminated in most cases by halting the injection and proceeding very slowly.

Serial exposures are made at 10-minute intervals, the first being made 10 minutes after the injection, and continuing until optimal visualization of the ducts is obtained. The wet films are examined immediately by the resident, and the patient's positioning is modified as required. The majority of ducts are seen satisfactorily on the 20-minute exposure. Gallbladder examination is carried out 1½ hours following injection; upright films are also done routinely when the gallbladder is visualized.

Indications and contraindications

The indications for Cholografin examination are:[8,9]

1. Complaints following cholecystectomy
2. Suspected common duct stone
3. Normal cholecystogram by other methods but persistent symptoms
4. Inability to take or intolerance to oral preparations
5. Need for rapid diagnosis or differential diagnosis
6. Preoperative cholangiogram for suspected or unsuspected stones in common duct
7. Gallbladder and duct visualization in children and infants, when study of gallbladder and ducts in infants has not been feasible until this time
8. When tumor is suspected near the porta hepatis. Tumors of common duct and tributaries are rare, but primary or metastatic tumors of the stomach, pancreas, or regional lymph nodes may be revealed preoperatively if they displace or partially obstruct the common duct.

The contraindications for Cholografin examination are:[8]

1. Hyperthyroidism
2. Known idiosyncrasy to iodine
3. In theory—chronic, progressive liver disease
4. Concomitant severe impairment of renal and liver functions.

Toxicity

Wise and O'Brien[10] doubt the value of skin testing, since positive tests have not indicated a greater severity of reactions. We do not routinely do skin tests at our hospital; however, a skin test, a conjunctival test, and an intravenous test are made on patients with a history of allergy. The intravenous test (that is, injection of 1 cc. of Cholografin and allowing 5 minutes for a possible reaction) is done on all patients. No local reactions have been noted.

We have noted nausea, vomiting, sensations of warmth, urticaria, metallic taste, cephalgia, and pressure in the upper abdomen. These symptoms are alleviated by suspending the injection temporarily and then progressing slowly. Since the untoward effects are primarily the result of too-rapid injection, 5 to 10 minutes or longer should be utilized.

Very few severe reactions have been reported. Frommhold[7] reported no severe reactions in 800 cases. Hornykiewytsch[11] reported on 274 cases, noting chill in 1 per cent of the cases, instances of severe fever complications lasting as long as 4 days, and collapse lasting up to 30 minutes.

Respiratory and circulatory collapse was reported by Ward.[12] Glenn and his associates,[8] in a series of 80 cases, report fairly severe reactions characterized by vomiting, dyspnea, and epigastric pain lasting approximately 30 minutes and subsiding spontaneously, although they saw no instances of respiratory and circulatory collapse. Huber and Stössel[13] reported no serious complications in 80 cases.

The reports of severe reactions in this country are indeed few, and we are led to believe that Cholografin is an almost innocuous solution. Our experience has differed, for in a series of 650 studies with Cholografin, we have noted four patients who experienced vascular collapse. Two of these individuals were middle-aged, and had no indications of liver damage or allergic history.

The first of these was a female who showed no reaction to the intravenous test, nor did she exhibit any of the common milder reactions during injection of 40 cc. of 20 per cent Cholografin Sodium. Approximately 10 minutes following the injection, the patient exhibited all the signs of vascular collapse. No respiratory distress, laryngeal edema, or urticaria was noted. The patient lost consciousness. Epinephrine hydrochloride 1:1,000, Benadryl, and oxygen were administered. The patient showed almost immediate response and was returned to her room in good condition. No further complications were reported. The second patient, a male, followed the same course and treatments. His condition differed only in the fact that he remained disoriented for approximately 2 days. No further complications were reported.

It is our feeling that a complete report of reactions following the use of Cholografin is not yet available. It is certainly wise to have oxygen and epinephrine hydrochloride 1:1,000 available when injecting this or any other contrast medium or drug intravenously. It would also be recommended that preparation be made to provide an adequate airway for the patient, should the need arise.

Drugs

Morphine may be used to constrict the sphincter of Oddi and increase the density of the dye by preventing its flow into the duodenum.[10] This should not be done until satisfactory drainage of the bile duct has been established. Amyl nitrite may be used in an attempt to alleviate a low grade obstruction of the sphincter of Oddi.

Liver function

Normally only 10 per cent of the Cholografin is eliminated through the kidneys,[8,10] the rest being excreted by the liver in the bile. The kidney excretion may be increased if the liver or biliary system is diseased. Such elimination of Cholografin suggests the possibility of its use as a liver function test.

In the presence of liver disease, the contrast medium is not excreted efficiently by the liver and good visualization may not be achieved in the hepatic ducts or gallbladder. In the presence of severe liver damage, Cholografin is excreted by the kidneys and a urogram is obtained. Wise and O'Brien,[10] in an attempt to predict with reasonable accuracy the probability of visualization of the biliary ducts in any given patient, compared the various liver function tests with Cholografin visualization. Considerable variations in serum bilirubin values with respect to visualization were noted; visualization was obtained in one instance in which the value was 4.3 mg. per 100 cc. There appeared to be a fair correlation with Bromsulphalein retention, so that they now do not attempt a Cholografin examination in a patient with bromsulphalein retention greater than 40 per cent. Following is the table[10] used as a rough index of the probability of visualization:

BROMSULPHALEIN RETENTION (5 MG. PER KG. BODY WEIGHT)

Per Cent (40 min.)	Visualization
0 - 10	Almost certain to be obtained
10 - 20	Probably will be obtained
20 - 30	Good chance
30 - 40	Slight chance
40 - above	Almost no chance

Failure of visualization or poor visualization of the gallbladder and extrahepatic ducts certainly suggests the possibility of liver damage in a differential diagnosis.

Film interpretation

The outstanding value of Cholografin is the demonstration of duct obstruction in either cholecystectomized or noncholecystectomized individuals. It must be made clear that there is no way of measuring a visualized duct with a ruler that will determine definitely whether or not it is obstructed.

The width of a normal duct depends on its stage of contraction. During its emptying phase it may be 1 to 2 mm. wide; during its filling phase it may measure 4 to 5 mm. (on the film). Measurement obtained by a ruler, however, is valuable in interpretation, since ducts measuring over 5 mm. may possibly be obstructed.

It might be well to point out that our observations on cholecystectomized patients have shown ducts which have varied greatly in size, some being up to 20 mm. in width, yet having no actual signs of obstruction. This means that, in either postsurgical or nonsurgical patients, it is imperative to carry duct examination to a point where obstruction can be eliminated and satisfactory drainage can be shown. Dye should be definitely seen in the duodenum to prove this. Usually dye will be seen in the ducts at 20 minutes, with the concentration increasing for 60 to 90 minutes and then decreasing. During a minimum of 2 hours the radiologist should evaluate the quantity of dye passing into the duodenum, the size and contour of the common duct, and the quantity of dye present in the ducts at the end of examination. Wise and O'Brien[10] report that in each instance in which partial obstruction has been proved at operation, the heavy concentration of dye has persisted for 2 to 2½ hours at radiologic examination.

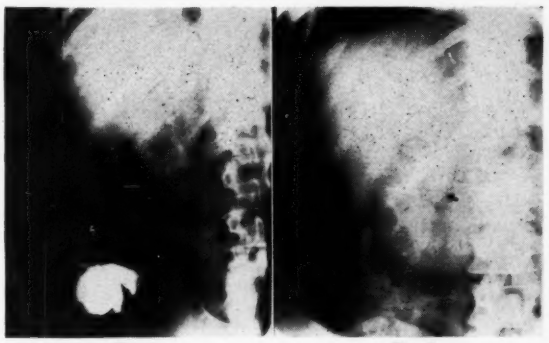


Fig. 1 Fig. 2

Fig. 1. Normal common bile duct: Cholografin study. Note kidney concentration. Fig. 2. Radiolucent calculi demonstrated in dilated common duct: Cholografin study.

When the gallbladder is present and the bile ducts are seen well but there is no concentration in the gallbladder itself, the radiologist should suspect an obstructed cystic duct and a pathologic gallbladder. In the presence of gallstones, the filling of the gallbladder is usually delayed, which may be due to hypertonus or spasm of the sphincter of Oddi.

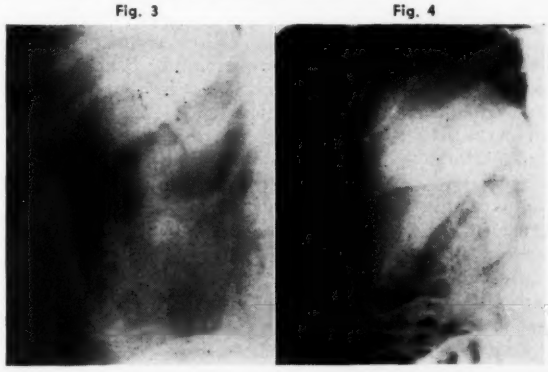
Calculi of the common duct may be recognized by the negative defects they produce. "Mud" or "sludge" in the common duct has remained undetected in some instances. Up to the present time, we have been unable to differentiate obstruction due to stricture, fibrosis of the sphincter of Oddi, and tumor. The pancreatic duct has been reported as being visualized, but in our series we have been unable to demonstrate this duct. Gallstones can of course be demonstrated in previously nonconcentrating gallbladders by using oral preparations.

Impaired hepatic functioning may prevent concentration of dye in the ducts and urograms may result. The cystic duct may be seen in postsurgical patients.

Some special technics are suggested. Body-section radiography may be used on either the ducts or gallbladder to demonstrate stones in the presence of overlying gas. Morphine can be used to prevent rapid drainage of the ducts when detailed study is necessary. A barium meal may be given to help establish the relationship of the duodenum and common duct when there is reason to suspect a lesion in or near the ampulla of Vater.

Figs. 3 and 4. Two examples of dilated common duct demonstrated by use of Cholografin. Etiology of obstruction not demonstrated.

Fig. 3 Fig. 4



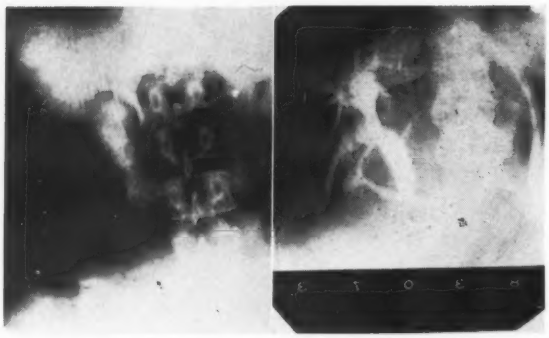


Fig. 5 Fig. 6

Fig. 5. Normal operative cholangiogram. Note pancreatic duct. Fig. 6. Operative cholangiogram showing obstruction at ampulla. It is difficult to differentiate obstruction due to stone from that due to other causes following operative exploration of the ampulla.

Errors in interpretation and procedure

The most common error made by those not familiar with interpretation is to confuse the ureter with the common bile duct. Also, the duodenal bulb or antrum of the stomach may contain dye and simulate the gallbladder. Postsurgical patients may show calculi which have either been spilled during surgery or are contained within the cystic duct. It must be emphasized that although the gallbladder may appear early, it should not be examined for calculi until at least 1½ hours have passed, since the dye is not yet completely mixed with the thick bile in the gallbladder. We have seen the mixture simulate radiolucent calculi or mask calculi in the early stages.

The entire amount of the contrast medium is in the colon 12 to 24 hours following injection. The opacification of the colon may be the cause of transient confusion if upper gastrointestinal studies are done at this time.

The scout film need not be emphasized further; however, in our series of cases we have demonstrated what appeared to be a concentrating gallbladder in a scout film. Inadvertent administration of oral dye was then ruled out as completely as possible. A second scout film was made a week later, and the gallbladder was again visualized. A diagnosis of milk or calcium bile was offered.

The right perivertebral portion of the diaphragm should not be confused with the common bile duct by those with any amount of experience.

Discussion

Does this new method of examination replace oral examination?

The mechanism of filling of the gallbladder with Cholografin appears to be the exertion of back pressure from the tightly filled common bile duct, through the cystic duct, into the gallbladder. In our experience, 49 per cent of our cases showed visualization of the gallbladder following nonconcentration by oral method.

The oral methods of cholecystography employed today require that the gallbladder have the power of concentration in order to be visualized. The process of concentration increases iodine content of the bile within the viscus, rendering it radiopaque. Cholografin requires only that the medium reach the cystic duct and that the duct is patent. Concentration in the gallbladder is unnecessary, as the bile is radiopaque as it enters.

The observations of Hornykiewytsch,[11] as stated in an English abstract of the original article, are as follows:

In the presence of chemically and bacteriologically proved cholecystitis without stones, three possibilities may occur. The gallbladder and the bile ducts may show a normal filling, the filling may be delayed, or there may be nonvisualization of the gallbladder. The intravenous method may allow a differential diagnosis between a pathologic gallbladder without and one with obstruction of the cystic duct, since there will be failure to visualize the gallbladder only if the cystic duct is occluded. *If it is patent the gallbladder will probably be demonstrated even though it is diseased.* If this type of pathology is suspected, it may be necessary to follow up the intravenous cholecystography with a Priodax [oral] examination to rule out gallbladder disease without stones. (Italics supplied.)

It must therefore be emphasized that intravenous cholecystography is a valuable complement to oral cholecystography in the diagnosis of gallbladder disease.

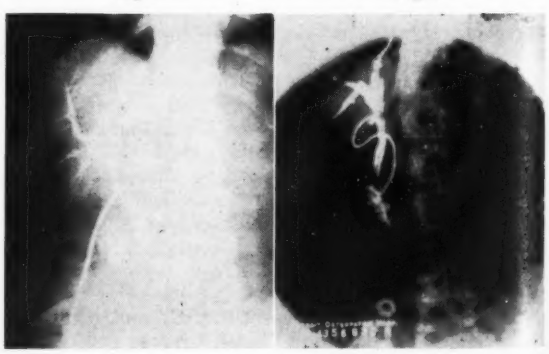
The gallbladder must function in its role of concentration in order to be classified as normal. If it functions (in absence of stones), it certainly could not be considered pathologic. Without complete clinical and laboratory data, the radiologist would therefore be in error to report a visualized gallbladder as being normal with only an intravenous gallbladder study, without the benefit of oral examination.

Operative cholangiography

The value of operative cholangiography is still controversial among some surgeons. Those who doubt its value seem to feel that their surgical ability to explore the common duct is questioned. This certainly is not the case. In reviewing the literature, some of the outstanding biliary surgeons admit difficulty in locating common duct stones at the time of operation. Recurrent or overlooked stones are reported in the literature as occurring in 3 to 18 per cent of cases. Adams and Noel[14] reported overlooked stones in 2.5 per cent without cholangiography as opposed to none with operative cholangiography. Loose[15] admits that calculi in the common duct are frequently overlooked. Brown and Brown,[16] in a follow-up on a group of 225 patients who had routine operative cholangiography, found that there were no cases of retained stones proved by recheck cholangiograms and no clinical evidence of retained stones. Weir and Linzama[17] gave a report on 232 cholecystectomies, 35.5 per cent (in 1954) having operative cholangiograms, and 22.4 per cent of the ducts being explored. Of the stones removed, 7.6 per cent were stones retained from previous common duct exploration.

Fig. 7. Operative cholangiogram showing radiolucent stones. Fig. 8. Stricture of common duct at ampulla of Vater.

Fig. 7 Fig. 8



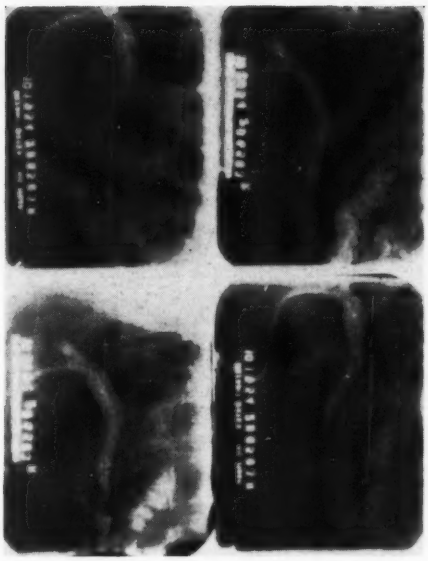


Fig. 9. Operative cholangiogram showing air in the common duct. This finding must be differentiated from that resulting from calculi.

Objectives of operative cholangiograms are the following:

1. To diagnose tumors on the head of the pancreas, common duct, or liver
2. To detect inflammation or spasm of the sphincter of Oddi
3. To indicate the location of stones
4. To avoid common duct exploration on poor-risk patients
5. To diagnose strictures
6. To demonstrate anomalies of the biliary tract.

Technic

Although most surgeons readily admit the value of operative cholangiography, they hesitate to carry out the procedure because of time consumed, poor films, or insufficient information. These objections may be well founded in some cases, but can be entirely eliminated if the surgeon, anesthetist, and radiologist work as a team. Therefore, technic is probably the most important part of this procedure.

This is the technic employed by our hospital, which has worked out very satisfactorily: Prior to operation, the patient is measured for the radiologist's technical factors. Before surgery is begun, he is placed over a wooden tunnel, centering the tunnel at the first lumbar vertebra. At surgery, if a pathologic duct is suspected, the surgeon inserts a vinylite catheter into the cystic duct. A 50 cc. syringe, containing 35 per cent Diodrast, is attached to the catheter. The surgeon then removes all instruments and towel clips, and a Lysholm wafer grid is placed in the tunnel beneath the common bile duct. (A preliminary survey film is not taken at that time, since all of our patients have had previous gallbladder x-rays, both with oral administration of dye and with Cholografin.) The surgeon injects 5 cc. of the dye, and the anesthetist suspends the patient's respiration for the exposure. This is repeated at 10 cc. and 15 cc., for a total of three exposures. The anesthetist's role is extremely important in the interpretation of the radiographs.

Much time can be saved if the x-ray department is notified before the time of surgery so that all equipment and necessary materials can be at hand for immediate use. The time consumed can also be shortened if the surgeon will work out a system so that the operation can be continued while the x-rays are being developed and interpreted. For example, the injection can be made through the cystic duct before cholecystectomy is performed, and the surgeon may proceed with the cholecystectomy at the same time that the films are being processed.

It is our opinion that a doctor and not an x-ray technician should carry out this x-ray procedure.

Complications to be avoided

The surgeon must be extremely careful not to inject air with the dye into the common duct. Resulting radiolucencies are sometimes impossible to differentiate from calculi. It must also be remembered that spasm of the sphincter of Oddi may result from manipulation at operation, making it impossible for the radiologist to accurately determine the patency of the sphincter. A 10-minute delayed film may be attempted in order to demonstrate patency. If there is any doubt in the surgeon's mind concerning calculi that may have been overlooked after exploration of the common duct, he may request confirmation by injection of the dye into a T-tube after the abdomen is closed.

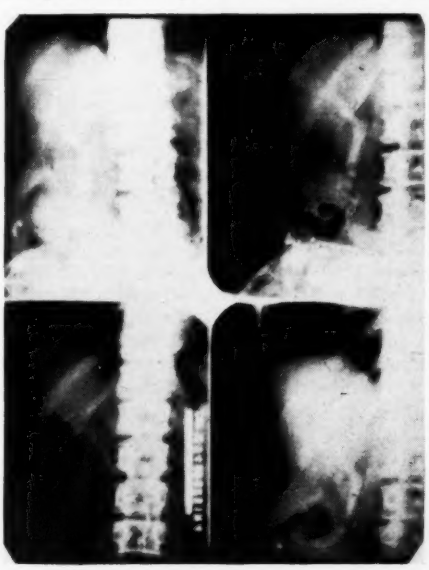
Summary

Cholografin is relatively safe for visualizing the common bile duct, with possible use as a liver function test.

Interpretation of gallbladder films using this technic is similar to that of oral cholecystography, but duct studies require special consideration if false diagnoses are to be avoided. This examination does not replace oral studies.

We feel that operative cholangiograms are imperative for complete evaluation at the time of surgery of the common duct, hepatic radicles, and the sphincter of

Fig. 10. Cholografin study showing calculi in common duct, with obstruction.



Oddi. It is essential that the surgeon, anesthetist, and radiologist work as a team for successful completion of operative cholangiography.

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References

1. Reich, A.: Accidental injection of bile ducts with petrolatum and bismuth paste. J. Am. M. A. 71:1555, Nov. 9, 1918.

2. Graham, E. A., and Cole, W. H.: Roentgenologic examination of gallbladder; new method of utilizing intravenous injection of tetrabromphenolphthalein. J. Am. M. A. 82:613-614, Feb. 23, 1924.

3. Menees, T. O., and Robinson, H. C.: Oral administration of sodium tetrabromphenolphthalein; preliminary report. Am. J. Roentgen. 13: 368-369, April 1925.

4. Langecker, H., Harwart, A., and Junkmann, K.: 2, 4, 6-Trijod-3-acetaminobenzoesäure-Abkömmlinge als Kontrastmittel. Arch. exper. Path. u. Pharmakol. 220:195-206, 1953.

5. Copleman, B., and Sussman, M. L.: Hepatic duct visualization following oral cholecystography. Radiology 36:465-467, April 1941.

6. Jones, G. E., *et al.*: Iodinated organic compounds as contrast media for radiographic diagnoses. Radiology 51:225-235, Aug. 1948.

7. Frommhold, W.: Ein neuartiges Kontrastmittel für die intravenöse Cholezystographie. Fortschr. Geb. Röntgenstrahlen 79:283-291, Sept. 1953.

8. Glenn, F., *et al.*: Intravenous cholangiography. Ann. Surg. 140: 600-614, Oct. 1954.

9. Link, A. J., *et al.*: Visualization of biliary ducts by intravenous injection of new contrast medium. J. Am. M. A. 158:1491-1494, Aug. 27, 1955.

10. Wise, R., and O'Brien, R.: Intravenous cholangiography. Surg. Clin. North America 35:755-762, June 1955.

11. Hornykiewytsch, T.: Zur Differentialdiagnostik des Ballonreifensymptoms. Fortschr. Geb. Röntgenstrahlen 79:323-328, Sept. 1953; Abstr. Marshall, W. A.: Intravenous cholangiography. Radiology 62:904-905, June 1954.

12. Ward, M. W. P.: Letters to editor. Lancet 266:887, 1954.

13. Huber, K., and Stössel, H. U.: Intravenous cholangiography with Biligrafin. Schweiz. med. Wchnschr. 84:117-118, Jan. 16, 1954.

14. Adams, J. D., and Noel, R. D.: Operative cholangiograms; critical review of their value. Virginia M. Month. 83:116-119, March 1956.

15. Loose, K. E.: Der Wert intraoperativer Seriencholangiographie bei organischen und funktionellen Gallenwegserkrankungen. Chirurg. 27: 162-167, April 1956.

16. Brown, G. M., Jr., and Brown, B. H.: Routine operative cholangiography; critical five year review. Am. Surgeon 22:415-419, April 1956.

17. Weir, R. A., and Linzama, C.: Operative cholangiography; survey of 83 cases in 232 cholecystectomies. Missouri Med. 53:280-284, April 1956.

CHRONIC CHOLECYSTIC DISEASE

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A WELL-GROUNDED PHILOSOPHY must rest behind every basic decision a surgeon makes. This philosophy should stem from sound training in diagnosis and surgical technic, independent study and research after the official training period, knowledge accumulated from practice in diagnosis and surgical procedure, and statistical records and careful follow-up study of patients with whom the surgeon has had personal experience.

A finished surgeon must therefore have a basic philosophy regarding the management of chronic cholecystic disease, including both diagnostic acumen and a therapeutic regimen consistent with that reached by other men experienced in this field.

Modern developments in osteopathic medicine and surgery may tend to inhibit the surgeon's thinking. The medical field tends to become more and more specialized as we grow and develop, and the surgeon is apt to become a technician, losing his grasp of the surgical patient's problems and being inclined to depend upon the laboratory, x-ray, and the internist for his surgical diagnosis. While the surgeon should have adequate consultation in all problems which warrant it, I believe he should maintain and develop his diagnostic ability.

In considering chronic cholecystic disease, it is important that we understand the anatomy and physiology of the gallbladder. It is normally 3 to 4 inches in length and has a capacity of approximately 1½ ounces. The walls are thin and bluish, with a yellowish-green, velvety inner surface; they consist of mucous membrane, a thick layer of plain muscle which is arranged somewhat irregularly and interspersed with fibrous tissue, and a peritoneal covering. Boyd[1] describes the gallbladder as remarkable and beautiful, with its tall, graceful folds of membranes dividing the inner surface into a series of polygonal spaces. The complex nature of its anatomy suggests that it is definitely not a superfluous organ, like the appendix.

We have generally considered the gallbladder to be a passive reservoir for bile, converting a continuous flow from the liver into an intermittent flow into the duodenum. Such a highly specialized structure would be meaningless for this purpose. Rous and McMaster[2] have shown experimentally that the gallbladder concentrates the bile as much as ten times by a process of absorption, an idea suggested as early as 1847 by Rudolf Virchow.[3] This concept is easily acceptable if we realize that bile is 97 per cent water and 3 per cent solids, of which 1 per cent is bile salts. Halpert and Hanke[4] believe the bile is completely absorbed by the gallbladder and does not again leave it by the cystic duct. Boyden,[5] however, has shown that a fat meal consisting of egg yolk and cream causes the gallbladder to empty in the duodenum, although normal emptying apparently does not occur during pregnancy. We can conclude that its function is both storage and concentration.

Many authorities think cholecystitis is basically chemical in origin. To support this theory, evidence is available that cultures of the bile and the wall of the gallbladder in cholecystitis are often negative for infection.[6] Chronic cholecystitis probably starts with either chronic catarrhal or chronic fibrous cholecystitis, cholesterosis (strawberry gallbladder), stasis gallbladder, or biliary dyskinesia. These pathologic changes in physiology must be considered forerunners to cholelithiasis and further pathologic change.

Diagnosis

A carefully taken history which brings to light the main features of the disease is important in the diagnosis. If the history reveals symptoms of digestive disturbances, fullness after meals, bloating and gaseous eructations, then a diagnosis of chronic cholecystic dis-

ease must be considered. Patients frequently complain of epigastric distress with gnawing, hunger like characteristics which comes between meals and is somewhat relieved by food. Many will describe their distress as purely a marked epigastric fullness, while others refer to it as a definite pain and state that it is accentuated by jolting or by eating a heavy meal. It is interesting to note that there will often be recurrent episodes of bowel disturbances, such as diarrhea.

It must be remembered that chronic cholecystic disease has a wide margin of limits as to degree and severity of symptoms, depending upon the sensitivity and pain threshold of the patient. The individual temperament must be considered, since some side symptoms of headache, vertigo, easy fatigability, and cardiovascular and vasomotor disturbances are due to a nervous mechanism rather than being directly caused by chronic cholecystic disease.

We know of no rules by which noncalculous cholecystitis or cholesterosis can be clinically differentiated from each other or from the calculous variety of cholecystitis. In general, the symptoms of noncalculous cholecystic disease are less severe than those of cholelithiasis. Pain is frequently found to be burning and throbbing rather than knife like when gallstones are present; also, the pain is usually not relieved as soon and there is more residual soreness following a gallstone attack.

When we consider that the palm of the hand, when placed over the area of the gallbladder, covers the gallbladder, bile duct, pancreas, pylorus, duodenum, hepatic flexure of the colon, right kidney, and sometimes the appendix, it is not surprising that troublesome problems in differential diagnosis occur. It is difficult to distinguish clinically between cholecystitis and duodenal ulcer, especially in the male, and it must also be remembered that often cholecystitis is associated with peptic ulcer. Numerous patients will complain of pain of the precordium as the only area involved.

Cholecystitis must be differentiated from renal colic, peptic ulcer, pancreatitis, appendicitis, diaphragmatic hernia, and angina pectoris. I shall not elaborate on differential diagnosis, except to state that x-ray, electrocardiography, and laboratory procedures are helpful. There is rarely anything of definite value to be gained on physical examination, although there may be tenderness and rigidity in the upper right quadrant when the patient is examined during or shortly after the attack of cholecystitis. It has been my experience that there is some deep residual tenderness, and while there may be no actual soreness at the time of examination, careful questioning of the patient may show that he is able to outline the area of involvement after suffering an acute episode. It must be remembered that in approximately 6 per cent of cases gallbladder pain may be referred to the left side, perhaps because of the patient's inability to localize the exact site of pain.

Treatment

I am well aware that some outstanding medical authorities, such as Alvarez,[7] would not recommend removal of the so-called "silent" gallstone. Colcock and McManus[8] of Lahey Clinic reviewed 1,356 cases and reported that slightly more than 2 per cent of the entire group was asymptomatic. It is my belief that many patients who classify their gallstones as "quiet" are really having symptoms they do not fully recognize.

My experience and the statistics of the Columbus Clinical Group would indicate that all gallstone patients who have no contraindications should have the benefit of cholescystectomy. We also believe that patients with suspicious symptoms of cholecystitis and yet without demonstrable stones should be approached with caution, and all possibility of medical management should be completely exhausted before surgery is considered. We have had excellent results in cases where the patient did not have gallstones and yet had all the clinical evidence of a pathologic gallbladder. Many of these were explored and, at the time of surgery, if the gallbladder showed evidence of cholesterosis (which could be seen by stripping of a small amount of the serosa), cholecystectomy was carried out. Very careful evaluation is done on all patients who have a suspicious history of cholecystitis and yet do not have stones demonstrable by x-ray.

TABLE I—AGE DISTRIBUTION FOR CHOLECYSTECTOMIES

Age	Female	Male	Total
Under 20	4	0	4
21 to 30	61	4	65
31 to 40	103	11	114
41 to 50	114	2	116
51 to 60	109	19	128
61 to 70	58	20	78
71 to 80	24	8	32
81 and over	1	2	3
Total	474	66	540

TABLE II—COMPARISON OF X-RAY REPORTS AND SURGICAL FINDINGS

Number of cases	X-ray report	Stones found at surgery
170	Calculi present	159
91	Nonvisualization of gallbladder	76
77	Poor concentration of dye, nonfunction or hyperirritability of gallbladder	36
66	Essentially normal gallbladder	4

TABLE III—GALLBLADDER DISEASE IN RELATION TO SEX

Disease	Female	Male	Total
Chronic cholecystitis	409	64	473
with stones in gallbladder	281	23	304
with stones in cystic duct	32	2	34
with stones in common bile duct	44	5	49
Acute or subacute cholecystitis	62	27	89
with stones in gallbladder	60	22	82
with stones in cystic duct	15	9	24
with stones in common bile duct	10	4	14
Carcinoma of gallbladder	3	0	3
with stones in gallbladder	3	0	3

Sir William Osler[9] wrote some sixty years ago that there is no medical treatment for gallstones. Recently Cattell[10] of Lahey Clinic wrote:

. . . we advise removal of the gallbladder for all patients with gallstones. The results following cholecystectomy for chronic cholecystitis without stones are very poor. There is no justification for the treatment of gallstones by cholecystojejunostomy

TABLE IV—MORTALITY IN RELATION TO AGE AND OPERATION

Age	Cholecystectomy alone	Cholecystectomy with associated choledocholithotomy	Cholecystectomy with choledochostomy	Other biliary tract operation	Total deaths
Under 20	0	0	0	0	0
21 to 30	0	0	0	0	0
31 to 40	0	0	0	0	0
41 to 50	0	1	0	0	1
51 to 60	0	1	1	1	3
61 to 70	3	1	0	2	6
71 to 80	1	1	0	0	2
80 and over	0	0	0	0	0
Total	4	4	1	3	12

since stones will almost invariably re-form in the gallbladder. If cases are studied properly, satisfactory results will follow cholecystectomy and if indicated, common duct exploration at the time of the initial gallbladder procedure.

Waltham Walters[11] of Mayo Clinic recently said: . . . some physicians and surgeons, I am afraid, still believe that when gallstones are not producing symptoms there is no particular need or urgency in having the gallbladder removed. This viewpoint is difficult for me to understand, for stones in the gallbladder will most certainly at some time produce obstruction of the cystic duct.

In the Columbus Clinical Group statistics, it is interesting to note that there were no deaths from cholecystectomy, done as an elective procedure for chronic cholecystitis, in the 5-year period. All deaths resulted from complications of cholecystitis, such as choledocholithiasis, acute cholecystitis, and pancreatitis. The only sound approach to the problem is to remove the actual pathologic structure involved, which is the gallbladder. It is common to see such patients who have been told by the physician over the years not to be concerned about the finding of gallstones on routine cholecystography, since no symptoms seem related to the presence of the stone at the time of examination, only to encounter a hopeless situation in later years because of severe cholecystitis or other complications. It would seem reasonable that these patients in whom complicated emergency conditions occurred, with a high mortality rate, could have been saved by operation before the disabling biliary tract disease developed. Also, during periods of delay, the patient grows older and other medical problems may develop. It has been said "the best thing nature can do with gallstones is to close the stone quarry and shut down the business." It seems logical that surgeons can assist the human body by intelligent early diagnosis and proper surgical management.

I would like to review briefly the statistics of Columbus Clinical Group from 1951 to 1955. It is interesting to note the age distribution in Table I. Surgery was carried out on patients in the age range from 17 to 90, with the greatest incidence between the ages of 31 and 60. These studies show that there is a strong predominance of gallbladder pathology in the female. Table II presents the x-ray reports in connection with pathology found at surgery. These figures substantiate that while x-ray is worth while in diagnosis, like all laboratory tests, it cannot be considered perfect. I note there is a 16 per cent error in identifying common bile duct stones when using the new intravenous Cholografin. Table III shows the type of pathology present and its relation to sex. Table IV breaks down the mortality rate into age distribution and type of operation performed. The mortality in which cholecystectomy alone was carried out shows four deaths, all of which were in the acute phase, while the remainder were those associated with choledocholithotomy or other complicated procedures. Table V again gives the procedures, records the mortality, and also shows the number of cases in which jaundice was present.

TABLE V—OPERATIONS FOR BILIARY DISEASES, WITH AND WITHOUT JAUNDICE
1951-1955

Operation	Total operations	Hospital deaths	Jaundice
Cholecystectomy alone	440	4	50
with choledocholithotomy	63	4	35
with exploratory choledochostomy	61	1	15
Total	564	9 (1.6%)	100
Choledocholithotomy alone	6	0	4
with other nonbiliary tract operations	1	1	1
Total	7	1	5
Choledochostomy alone	5	0	3
with cholecystotomy	2	2	2
Total	7	2	5
Cholecystotomy alone	4	0	2
Grand Total	582	12 (2.06%)	112

The postoperative cholecystectomy syndrome is a subject in itself. I would like to state, however, that three basic factors must be considered: (1) errors in diagnosis; (2) improper technic at the time of surgery, with failure to explore the common bile duct; and (3) a functional spasm of the sphincter of Oddi which may necessitate a transduodenal sphincterotomy.

Conclusions

The surgeon should have a sound basic philosophy regarding the management of chronic cholecystic disease and must continually make an effort to sharpen his diagnostic acumen. A well-grounded knowledge of anatomy and physiology is essential.

A meticulous case history with careful examination of the patient is important. A low mortality rate should encourage the performance of elective cholecystectomy. Complications of cholecystitis materially raise the morbidity and mortality rate. Cholecystectomy is the procedure of choice in most biliary pathology.

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References

1. Boyd, W.: Pathology for surgeon. Ed. 7. W. B. Saunders Co., Philadelphia, 1955.
2. Rous, F. P., and McMaster, P. D.: Concentrating activity of gallbladder. J. Exper. Med. 34:47-73, 1921.
3. Virchow, R.: Cited by Boyd, W.: *Op. cit.*, ref. 1.
4. Halpert, B., and Hanke, M. T.: Observations on function of gallbladder. Am. J. Physiol. 88:351-361, March 1929.
5. Boyden, E. A.: Study of behavior of human gall bladder in response to ingestion of food: together with some observations on mechanism of expulsion of bile in experimental animals. Anat. Rec. 33:201-255, Aug. 25, 1926.
6. Cole, W. H.: Recent trends in gallbladder surgery. J. Am. M. A. 150:631-637, Oct. 18, 1952.
7. Alvarez, W. C.: Introduction to gastro-enterology. (Ed. 3 of Mechanics of digestive tract.) Paul B. Hoeber, New York, 1940.
8. Colcock, B. P., and McManus, J. E.: Cholecystectomy for cholelithiasis; review of 1356 cases. Surg. Clin. North America 35:765-771, June 1955.
9. Osler, W.: Principles and practice of medicine. Ed. 3. D. Appleton & Co., 1898.
10. Cattell, R. B.: Surgical management of obstructive jaundice. Postgrad. med. 1:209-213, March 1947.
11. Walters, W.: Diseases of gallbladder and bile ducts; surgical aspects, in Collected papers of Mayo Clinic. W. B. Saunders Co., Philadelphia, 1956, pp. 182-187.

Additional References

Bancroft, F. W.: Treatment of chronic cholecystitis, with and without stone; indications and contraindications for choledochostomy. Bull. New York Acad. Med. 22:292-305, June 1946.

Bartlett, M. K., and Quinby, W. C., Jr.: Surgery of biliary tract; I. Mortality and complications of cholecystectomy and choledochostomy for chronic cholecystitis. New England J. Med. 254:154-156, Jan. 26, 1956.

Cole, W. H.: Indications and precautions in cholecystectomy. Minnesota Med. 36:714-719, July 1953.

Davis, L., ed.: Christopher's Textbook of surgery. Ed. 6. W. B. Saunders Co., Philadelphia, 1956.

Glenn, F.: Chronic biliary tract disease. Rev. Gastroenterol. 14:240-244, April 1947.

Harridge, W. H., and Helsby, C. R.: Chronic cholecystitis. Am. Surgeon 21:1205-1210, Dec. 1955.

Hurley, V.: Some problems in surgery of gallbladder. M. J. Australia 1:713-717, May 28, 1949.

Large, A. M.: Problems in surgery of gallbladder. Missouri Med. 51:803-806, Oct. 1954.

Meagher, S. W., and Campbell, A. J.: Acute and chronic cholecystitis; review of 329 cases. New England J. Med. 252:615-617, April 14, 1955.

Pinto, F. A.: Cirurgia das vias biliares; relatório oficial. An. paulist. med. e cir. 69:171-183, March 1955.

Thorlakson, P. H.: Indications and contraindications for cholecystectomy. Canad. M. A. J. 72:415-418, March 15, 1955.

Twiss, J. R., Carter, R. F., and Fishman, B. S.: Infection in chronic cholecystitis. J. Am. M. A. 147:1226-1231, Nov. 24, 1951.

Walters, W.: Diseases of gallbladder and bile ducts; surgical aspects. Arch. Surg. 72:199-204, Feb. 1956.

Watson, J. R.: Surgeon's side of gallbladder disease. Am. Pract. & Digest Treat. 3:520-522, May 1949.

Discussion

HARRY E. ELSTON, JR., D.O., Warren, Ohio: The subject of chronic cholecystic disease occupies an important place in the practice of general surgery. I read Dr. Conley's paper with much interest and find that he has made an excellent presentation of the subject. However, I believe that the postcholecystectomy syndrome, the role of the recent diagnostic adjuncts, and a more detailed discussion of the functional biliary disorders should occupy a more integral part in the discussion of surgery of chronic cholecystic disease. These points I shall discuss briefly.

It goes without saying that functional disorders usually can be relieved by medical therapy. These problems often are unaffected or even aggravated by cholecystectomy, while organic disease, whether obstructive, inflammatory, infectious, calculous, or malignant, requires surgical intervention to prevent serious complications.

It is noncalculous cholecystitis, functional disease, and postcholecystectomy failures that cause physicians the most concern. Dr. Conley well states that the majority of our problems arising from this classification are due to faulty diagnosis and improper or injudicious surgical technic.

Twiss[1] gives us a classification of biliary tract disorders. Biliary dyskinesia, as a functional disorder, is a seldom recognized cause for biliary tract symptoms. It is divided into atonic or hypotonic dyskinesia and the hypertonic form.

Atonic dyskinesia is usually found in "fair, fat, and forty" sedentary females who have large flaccid gallbladders with achlorhydria or hypochlorhydria, and much indigestion but little colic.

Hypertonic dyskinesia results from a spastic, irritable sphincter of Oddi and is characterized by pain or colic and excessive internal nervous tension. It is subdivided further into a hyperacidity type, diagnosed by duodenal drainage and gastric analysis. These patients respond most unfavorably to surgery. Treatment consists of an ulcer type diet with increased feedings, sedation with antispasmodics before meals, and antacids after meals. The use of tobacco must be discontinued.

A second variety of hypertonic dyskinesia is the reflex type, which has its etiology outside the biliary tract. It may be caused by worry and emotional disturbances, gastrointestinal disorders, genitourinary tract disease, pelvic disorders, or referred from spinal pathology. Its treatment consists of removal of the cause plus a regimen similar to the hyperacidity type minus the antacids.

According to Twiss:[1]

> Excellent results can be obtained in all types of hypertonic dyskinesia by assistance in the solution of problems relative to family, marital, financial or business affairs. A vacation or change of occupation or environment may do more good than medicine.

It is in these cases especially that osteopathic manipulative therapy occupies an important facet in the therapeutic plan.

Catarrhal or noncalculus cholecystitis presents a clinical picture of moderate digestive disturbances, without chills, colic, fever, or jaundice, but with impaired gallbladder function and often hypochlorhydria. Gallbladder stasis must be overcome, eliminating such factors as missed meals, drastic dieting programs, low-fat diet, dehydration, and chronic constipation. Such factors as inspissated bile and inflammatory thickening with partial obstruction of the cystic duct may lead to obstruction and formation of calculi requiring surgical intervention.

Our department of surgery has had a somewhat limited experience with cholecystoduodenostomy for noncalculous cholecystitis. Twelve such operations were performed over a period of 6 months by other members of our surgical staff. My personal knowledge of their follow-up is incomplete; however, two cases previously done have had reoperations during one of a number of recurring acute episodes. Acute cholecystitis was reported by the pathologists.

The postcholecystectomy syndrome presents a real problem. Analysis reveals that the following may be factors:

1. Extrahepatic disease, such as duodenal ulcer, chronic or recurrent pancreatitis, and hiatus hernia

2. Diseases of the liver parenchyma, such as cirrhosis, hepatitis, or tumor

3. Lesions of the major bile ducts, such as persistent cystic duct stumps, marked angulation, distortion or stricture of common bile duct, common duct calculi, fibrosis, or reflex spasm of the sphincter of Oddi

4. Failure or absence of osteopathic manipulative therapy in the postoperative care of gallbladder surgery to correct reflex osteopathic spinal lesions.

The use of operative cholangiography to visualize the common bile duct is useful in reducing the number of overlooked common duct stones and the pathologic status of the sphincter of Oddi. Intravenous cholangiography reveals partial obstructions of the common bile duct in cholecystectomized patients. It follows that there may occur a delay in emptying time with resultant accumulation of sediment, and stones may form in the common duct. It is well to remember that faceted stones do not form in the common duct itself.

Wise and O'Brien[3] reported a series of 400 patients with preoperative cholangiography in whom previous biliary tract surgery had been done. Comparing results after actual exploration, all ducts dilated more than 15 mm. were found to be partially obstructed while those narrower than 8 mm. were unobstructed. In the ducts of intermediate size, the diameter was of no value in telling whether it was obstructed. They state that this was evidence for re-exploration with the anticipation of finding pathologic changes to account for the symptoms.

Sparkman[3] states that during the past year he has practiced preoperative intravenous cholangiography within 24 hours of anticipated surgery; thus far there has been no instance of an overlooked stone when cholangiography had been apparently normal at that time.

Savory and his associates,[4] reporting on a series of 200 liver biopsies performed at the time of cholecystectomy, stated that the results of this study indicate strongly that biliary tract inflammation is more generalized than is usually recognized, in that the intrahepatic biliary system is changed in 32 per cent of the cases of chronic gallbladder disease. This could explain a number of cases that do not respond to surgery even when calculous disease is present.

The management of biliary tract disorders calls for the proper use and integration of a myriad of diagnostic adjuncts, with proper clinical evaluation, plus institution of proper therapy. The use of preoperative intravenous cholangiography and operative cholangiography has added much to the diagnostic acumen of the osteopathic surgeon, just as choledochostomy, transduodenal choledochostomy and sphincterotomy, choledochoduodenostomy, and concomitant liver biopsy at the time of cholecystectomy have added much to this armamentarium. The problem is far from simple and as yet is far from being solved to everyone's satisfaction.

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References

1. Twiss, J. R.: Management of gallbladder disorders. M. Clin. North America 40:475-484, March 1956.

2. Wise, R., and O'Brien, R.: Intravenous cholangiography. Surg. Clin. North America 35:755-762, June 1955.

3. Sparkman, R. S.: Discussion of Residual common duct calculi, by A. O. Singleton, Jr., and J. L. Coleman. Ann. Surg. 143:619-627, May 1956.

4. Savory, P. B., *et al.*: Biliary system inflammation and cholecystitis; study of 200 liver biopsies done at cholecystectomy. Am. J. Surg. 90:562-567, Oct. 1955.

Diagnosis of NONTUBERCULOUS DISEASES of the chest

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THE NONTUBERCULOUS DISEASES of the chest to be considered in this paper are tumors, pulmonary suppurative diseases, postoperative atelectasis, traumatic diaphragmatic hernia, and rupture of the esophagus. In view of the prevalence of tumors of the lungs[1,2] and the increasing incidence of malignancy, it is appropriate that lung tumors and their differential diagnosis be considered first.

Tumors

Since the early manifestations of chest tumors depend to a large extent on the point of origin, an arbitrary classification based on location is clinically more practical than a classification based on the pathologic characteristic of the tumor itself.[1] The position of the tumor in the thoracic cavity is of great value in suggesting its type, for certain types of lesions are more likely to occur in some locations than in others. Thus separate consideration might be given tumors arising in a main and lobar bronchus, those arising in a segmental bronchus, and those arising in the periphery.

Tumors of the mediastinum also must be classified according to their location in the anterior, posterior, middle, or superior mediastinum. The most common types of tumors in the anterior mediastinal area are the various teratoid neoplasms;[3] cystic tumors and intrathoracic thyroid tumors may also be found in this area. In the posterior mediastinal area, the most common tumor is the neurofibroma; 30 to 40 per cent of these are malignant.[4,5] Other lesions in this region are esophageal tumors and cysts and tuberculomas.

Differentiation of tumors of the superior mediastinum is often difficult because so frequently the tumor fills the entire space, making evaluation of the surrounding visceral relationships difficult. Thymomas, neuroblastomas, cysts, and intrathoracic goiters are the most common tumors of the superior mediastinal area.

Lesions of the middle mediastinum include those of the great vessels, aneurysms, cysts, lymphoblastomas, and tumors of the heart.[4]

Tumors of the Main and Lobar Bronchi.—Approximately 50 per cent of the bronchogenic carcinomas arise in the main and lobar bronchi,[1,6,7] and cough is one of the earliest symptoms. Cough, which is present in 50 to 55 per cent of incipient cases and in 90 per cent of far-advanced cases,[1,2] is the result of bronchial irritation and is usually nonproductive. Although cough is a symptom of many respiratory tract disorders, it really does not become significant until a change is noted in its character or frequency. The change per se is the significant factor; for example, cough may suddenly become paroxysmal, it may be only nocturnal, it may suddenly become productive, or, if previously productive, may become nonproductive. It may occur only when the patient is in certain positions.

As the bronchial irritation progresses to some form of bronchial obstruction, other symptoms arise, because there is interference with air exchange, bronchial drainage, or both.[1,2] The lesser degrees of bronchial obstruction may give rise to a wheeze, which can often be localized unilaterally. The wheeze may be more or less continuous until obstruction becomes complete. When obstruction is complete, the wheeze stops because the by-pass valve mechanism has become a stop valve.

Impairment of the normal mechanism of bronchial drainage by an obstruction results in secondary infection.[1,2] This occurs in 33 to 50 per cent of cases, and the condition may at first resemble one of the common acute and recurrent lower respiratory infections. At this stage of the disease the patient is often treated for various types of pneumonia, bronchitis, influenza, or pleurisy. Recurring pulmonary infections, frequently and mistakenly called virus pneumonia, should awaken

any suspicion not previously aroused. "Unresolved pneumonia," which is an erroneous term, may be the manifestation of lung abscess, of bronchogenic carcinoma, bronchiectasis, or tuberculosis.

Another symptom which is prone to occur during the early phase of lesions of the larger bronchi is blood streaking or hemoptysis. The bleeding is not "pansize" as in bronchiectasis, lung abscess, or adenoma but occurs as blood streaking or slight stippling of the mucus. Some degree of hemoptysis is frequent.[8]

Although physical examination often fails to reveal direct signs of a chest tumor, indirect evidence can frequently be detected in the form of wheezing or signs of atelectasis, pneumonitis, suppuration, or pleural fluid. The physical examination should include a particularly careful search for enlarged lymph nodes in the supraclavicular fossae, axillas, and abdomen. Observation of the eyes may reveal a contracted pupil or ptosis of the lid, indicating involvement of the lower cervical sympathetic ganglia.[9] The larynx may show impaired motion of a vocal cord, indicating invasion of, or pressure upon, one recurrent laryngeal nerve. This can occur before marked changes take place in the voice.

The genitals and the prostate should be examined carefully because the former may be the site of origin of a single metastatic tumor in the lungs which otherwise resembles a primary growth (solitary metastasis of a seminoma). The extremities must be inspected and palpated for evidence of pulmonary osteoarthropathy. It is amazing how many patients with bronchogenic carcinoma have been treated for many months for rheumatoid arthritis before a chest x-ray revealed the underlying disease. The one important feature of rheumatoid arthritis in its relation to pulmonary neoplasm is that it usually precedes the pulmonary symptoms by 8 to 12 months.[10]

The patient should be in the lateral decubitus position for auscultation of the chest.[11] This position is important for auscultation because, if a by-pass valve mechanism is present but is not yet producing a constant wheeze, the wheeze will be augmented by this position. The shift of the mediastinum and further narrowing of the bronchus will produce this symptom, particularly in forced expiration.

There is an interval in bronchial obstruction[2,8] when the check-valve mechanism gives rise to signs of obstructive emphysema. This period is transitory. Obstruction soon becomes complete and, in cancer, signs of emphysema are soon succeeded by those of atelectasis.

Rigler and his associates[12] found that segmental, lobar, or unilateral lung emphysema is one of the most important early roentgen signs of lung tumor. Therefore, it is imperative that both inspirational and expirational films be taken in order to substantiate or negate this early radiographic finding. Rigler's most important contribution to the early recognition of chest tumors is the finding of unilateral hilar enlargement. In his survey of 127 cases, he found that, if the transverse diameter of the hilus measures more than 13 cm., abnormal findings, that is, probable bronchogenic carcinoma, will be present in nine out of ten cases. Also, abnormalities will be found in nine out of ten cases in which one hilus is 1.7 cm. greater than its opposite.

Bronchoscopy should be performed not only to obtain tissue for biopsy and cytologic examination of the bronchial secretions,[1,13,14] but with the intention of ruling out involvement of the proximal portion of the main bronchus. Further examination should evaluate any indirect evidence of mediastinal involvement, such as compression or fixation of the lower trachea or main bronchus, widening or fixation of the carina, and/or paralysis of a vocal cord. In some suspicious cases, repeated bronchoscopic examinations are indicated in an attempt to obtain cytologic confirmation.[14,15] In a series of fifty cases of bronchogenic carcinoma from the Magnolia Hospital and the Los Angeles County Osteopathic Hospital it was found that the lesion was identified by means of bronchoscopic biopsy in 52 per cent, and when this procedure was combined with cytologic examination, the rate of identification was 60 per cent.

Tumors of the Peripheral Bronchi.—Those lesions which arise in the lung periphery might appropriately be called silent tumors[16,17] or coin lesions,[18] for they frequently attain considerable size without giving rise to pulmonary symptoms. By the time symptoms develop, the growth has extended to the larger bronchi and is deeply situated. If the growth has extended to the subpleura, thoracic cage, adjacent viscera, or vertebral bodies, pain and/or pleural effusion will be an early finding. Pleural effusion may be the first sign of a peripherally located effusion.[6]

The primary tumor of the so-called silent type may appear unchanged on repeated x-rays even though extensive blood-borne metastases have occurred. Detection of such tumors is relatively easy, but their histologic identification is particularly difficult. Peripheral tumors are not likely to shed cells that can be detected by microscopic examination of the sputum or of the bronchial secretions. Body section roentgenography is helpful in determining the presence or absence of calcium within the lesion.[17,19,20] A calcium-containing lesion strongly suggests hamartoma or tuberculoma. However, this is not a specific criterion. In my experience, primary peripheral neoplasms, in most instances, show definite roentgen evidence of infiltration beyond the main mass of density in contrast to the discrete mass of tuberculoma.[21]

Symptoms and physical findings relating to bronchial obstruction usually do not occur in peripheral lesions.[22] Therefore, extensive atelectasis and secondary infection are not encountered, although there may be cavitation within the tumor itself. It should be noted that 25 per cent of all lung abscesses are secondary to peripheral bronchial carcinoma.[21] In this group of silent lesions, the presenting symptoms are often extrapulmonary. Metastases are thought to occur rather early, and symptoms attributed to metastasis to the brain, bones, liver, or other parts of the body may precede symptoms of the primary lesion.[22] Peripheral carcinomas constitute about 25 per cent of all bronchogenic tumors.[1]

Pulmonary suppurative diseases

Bronchiectasis.—Bronchiectasis is a segmental disease that may be present in any one of the eighteen segments of the lung.[23,24] In about 35 to 50 per cent of cases, it occurs bilaterally. Bronchiectasis is considered one of the pulmonary suppurative diseases. Suppuration is usually so characteristic that the patient will offer the history of a productive purulent cough which his existed for years. In order to distinguish whether the sputum arises from the tracheobronchial tree or from the paranasal sinuses, the patient should be asked if the material expectorated is similar to that which he obtains when he blows his nose.

Hemoptysis is a common symptom and finding and is particularly significant when the history reveals that hemoptysis has been intermittent for years. Hemoptysis occurs in about 50 per cent of the cases.[25] Another

manifestation of bronchiectasis is recurrent lower respiratory infection or pneumonia.

By far the best means of confirming the presence of bronchiectasis—in fact this entity cannot be diagnosed with certainty by any other means—is the delineation of the bronchial tree with a contrast medium.[26] Bronchograms are best made at the x-ray table where spot films, delayed films, and complete mapping of the bronchial system can be obtained.

Lung Abscess.—The vast majority of lung abscesses originate as the result of bronchial occlusion with subsequent infection distal to the obstruction. In about half the cases a precipitating cause, such as a respiratory tract operation, dental extraction, abdominal operation, or episodes of unconsciousness, may be implicated.[25] A chronic lung abscess must be distinguished from other cavitating diseases, especially tuberculosis, fungous diseases, and bronchogenic carcinoma. The cavity of coccidioidomycosis is usually thin walled and does not have a pulmonary reaction zone surrounding it. Moreover, there is very little tendency to progression in this type of cavity.

I believe the prevailing viewpoint, that the lower lobe is the most common site for abscess formation, bears scrutiny. In my experience the upper lobe has far more frequently been the site for abscess formation. In fact, in twelve cases during the past 2 years, the lower lobe (right) was invaded only twice. In addition, sudden expectoration of a large amount of putrid sputum was a symptom in less than half these cases.

A cavity will not be visualized radiographically until bronchial drainage is established; therefore, in the early case, x-rays will reveal only opacification in one or more pulmonary segments.

Since, as previously stated, 25 per cent of lung abscesses are due to bronchogenic carcinoma, and since approximately 60 per cent of these can be diagnosed by means of bronchoscopy, the value of this procedure is obvious.

Postoperative atelectasis

Pulmonary complications are an important cause of morbidity following surgical procedures and a significant factor in surgical mortality. Atelectasis is recognized as the most common postoperative pulmonary complication following major operations, its rate of occurrence following upper abdominal surgery being approximately 10 per cent.[27] The common cause of postoperative atelectasis is obstruction of the bronchi by excessive tenacious secretions or mucus.

Fever is usually the first sign of postoperative atelectasis, developing on the second, third, or fourth day after operation. The temperature is not very high, but the elevation is sustained for about a week.[27] Cough may not be present during the first few days, and there is no dyspnea unless massive atelectasis involves an entire lung. Eventually cough develops with mucopurulent sputum. There may be a reduction in breath and voice sounds with rales on forced breathing or after cough.

In atelectasis, particularly if extensive and unilateral, x-rays show a shift of the heart and other mediastinal structures toward the involved side, a raised diaphragm, and diminished motion or fixation of the chest wall on the same side.

Traumatic diaphragmatic hernia

Traumatic hernia may occur at any point in the diaphragm. These hernias may be associated with rupture of the peritoneal and pleural membranes as well as with the muscular portion of the diaphragm, in which case there is no hernial sac.[25] In other words, this constitutes an evisceration of the abdominal contents into the thorax.

Many times clinical manifestations of traumatic hernia may be nearly absent. One of my middle-aged male patients who had a fractured rib, the eighth on the left, complained only of mild dypsnea, flatulence, and dysphagia. As so frequently happens, the symptoms did not develop until a week after the injury. On the contrary, one of my young male patients had fulminating symptoms of orthopnea and lower left chest pain from the onset. It was found that he also had a ruptured spleen.

Rupture of the esophagus

Articles and textbooks which discuss the differential diagnosis of acute surgical emergencies often fail to mention rupture of the esophagus. Rupture of the esophagus is probably more frequent than is suspected and, therefore, should be the subject of continued scrutiny. When the patient is first seen he appears severely ill, often lying on his side with drawn-up knees. He is dyspneic, and cyanosis and shock may be present. The pulse rate is not unusual, but the respiratory rate is always rapid. Although the blood pressure is usually normal, it may be quite low.[28]

Chest findings may be entirely normal. However, if pleural effusion is present, typical findings of lack of breath sounds and dullness over the effusion will be noted. The skin and subcutaneous tissue often reveal evidence of subcutaneous emphysema. This is often first noted in the left supraclavicular area or at the suprasternal notch.

The abdomen, particularly the upper abdomen, always shows rigidity, and the disease is often thought to be in the abdominal cavity. The diagnostic triad to be emphasized comprises (1) rapid respiration, (2) abdominal rigidity, and (3) subcutaneous emphysema.

Another important clue that the patient offers is a history that "something ruptured and moved into his chest or that something ruptured in the chest and moved."

Conclusions

It must be kept in mind that many different types of pathologic conditions in various locations in the lungs and mediastinum have similar x-ray manifestations,[1,2,3] and a definite diagnosis cannot always be established even after the employment of all methods of thoracic diagnosis such as bronchoscopy, bronchography, esophagoscopy, examination of sputum, and cytologic examination of bronchial secretions.

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References

1. Norris, C. M.: Early clinical features of bronchogenic carcinoma; illustrative cases. Dis. Chest 14:198-217, March-April 1948.

2. Jackson, C.: Mechanism of physical signs in neoplastic and other diseases of lung, with especial reference to atelectasis and emphysema. J. Am. M. A. 95:639-644, Aug. 30, 1930.

3. Poppe, J. K.: Bronchiogenic carcinoma masquerading as other diseases; review of 200 cases. Dis. Chest 20:75-83, July 1951.

4. Rodriguez, C., Brito, A. V., and Potenza, L.: Neurogenic tumors of posterior mediastinum. Dis. Chest 19:690-697, June 1951.

5. Godwin, J. T., *et al.*: Primary intrathoracic neurogenic tumors. J. Thoracic Surg. 20:169-194, Aug. 1950.

6. Beeler, T. T., Jr., and Irey, N. S.: Bronchogenic carcinoma; clinicopathologic study of 50 autopsied cases. Dis. Chest 18:61-80, July 1950.

7. Rubin, E. H.: Diseases of chest, with emphasis on x-ray diagno-

sis; with Principles of surgical treatment, by M. Rubin. W. B. Saunders Co., Philadelphia, 1947.

8. Jackson, C., and Jackson, C. L.: Diseases of nose, throat and ear. W. B. Saunders Co., Philadelphia, 1945.

9. Rogers, J. G., and Keogh, J. P.: Intrathoracic ganglioneuroma. Dis. Chest 17:532-543, May 1950.

10. Pattison, J. D., Jr., Beck, E., and Midley, W. B.: Hypertrophic osteoarthropathy in carcinoma of lung. J. Am. M. A. 146:783-787, June 30, 1951.

11. Lyons, H. A.: Diagnosis of bronchial stenosis. Dis. Chest 18: 16-26, July 1950.

12. Rigler, L. G., O'Loughlin, B. J., and Tucker, R. C.: Significance of unilateral enlargement of hilus shadow in early diagnosis of carcinoma of lung, with observations on method of mensuration. Radiology 59:683-692, Nov. 1952.

13. Clerf, L. H., and Herbut, P. A.: Bronchogenic carcinoma. Am. J. Med. 1:168-173, Aug. 1946.

14. Farber, S. M., *et al.*: Early diagnosis of primary lung cancer by cytologic methods. Dis. Chest 20:237-256, Sept. 1951.

15. Jackson, E., Bertoli, F., and Ackerman, L. V.: Exfoliative cytology; adjunct in diagnosis of bronchogenic carcinoma. J. Thoracic Surg. 21:7-23, Jan. 1951.

16. Phillips, F. J., Basinger, C. E., and Adams, W. E.: Bronchogenic carcinoma; pathologic, clinical, correlative study of full-size mounts from operated carcinoma. J. Thoracic Surg. 19:680-698, May 1950.

17. Abeles, H., and Chaves, A. D.: Significance of calcification in pulmonary coin lesions. Radiology 58:199-202, Feb. 1952.

18. Abeles, H., and Erlich, D.: Single, circumscribed, intrathoracic densities. New England J. Med. 244:85-88, Jan. 18, 1951.

19. Culver, G. J., Concannon, J. P., and MacManus, J. E.: Pulmonary tuberculosis; pathogenesis, diagnosis, and management. J. Thoracic Surg. 20:798-822, Nov. 1950.

20. Black, H., and Ackerman, L. V.: Clinical and pathologic aspects of tuberculoma of lung. S. Clin. North America 30:1279-1297, Oct. 1950.

21. Moyer, J. H., and Ackerman, A. J.: Bronchogenic carcinoma as differential diagnostic problem in pulmonary diseases; carcinoma arising from major bronchi uncomplicated by secondary infection. Am. Rev. Tuberc. 63:176-193, Feb. 1951.

22. Jackson, C. L.: Bronchial obstruction. Dis. Chest 17:125-150, Feb. 1950.

23. Moersch, H. J.: Value of bronchoscopy and bronchography in diagnosis of pulmonary disease. Collect. Papers Mayo Clin. 44:485-491, 1952.

24. Lorenz, T. H.: Bronchiectasis; study of 220 proved cases. Am. J. M. Sc. 221:522-530, May 1951.

25. Hinshaw, H. C., and Garland, L. H.: Diseases of chest. W. B. Saunders Co., Philadelphia, 1956.

26. Hastings, O. L.: Bronchologic aid to radiologist. J. Am. Osteop. A. 53:706-708, Aug. 1954.

27. Banyai, A. L., ed.: Nontuberculous diseases of chest. Charles C Thomas, Springfield, Ill., 1954.

28. Flipse, M. E.: Spontaneous rupture of esophagus. Dis. Chest 19:165-189, Feb. 1951.

The early treatment of BURNS

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ALTHOUGH BURNS are chiefly home accidents (more than 83 per cent in 1947)[1] the possibility of mass disaster from atomic attack is ever present. Therefore, for purposes of civil defense, if for no other reason, all physicians should possess a practical knowledge of the fundamentals of the modern treatment of burns. Few of us can appreciate the devastating effects of an atomic explosion, the first of which, over 11 years ago, left in its wake the "Hiroshima maidens," whose rehabilitation has challenged the ingenuity of world-renowned plastic surgeons.

Burns from atomic explosions are largely thermal and differ little from flame or fire burns except in distribution. Primary or profile burns due to the infrared component of the blast light affect no more than 50 per cent of the body, which is the maximum that can be exposed,[2] and exclude those parts of the body covered by light clothing, which is more protective than dark.

Regardless of origin, severe burns cause a problem in fluid and electrolyte balance, in addition to local destruction, toxemia, infection, and disturbed nutrition.

Since most hospitals lack the services of a plastic surgeon, burns are most often seen by the general surgeon or internist. Severe burns demand the cooperative efforts of both, especially when a disaster has occurred and the emergency room is flooded with victims, all needing immediate attention. The surgeon is usually best qualified to direct and correlate treatment.

Except for the emergency local dressing or covering which is applied at the scene of injury, the treatment of severe thermal burns begins on the patient's admission to the hospital. The hospital should prepare for arrival of casualties by providing an emergency or operating room with a cupboard, wherein are stored the special dressings and materials necessary for modern burn care. An alternative is a burn cart which can service several rooms.

Early emergency treatment

After the patient's admission to the burn room, his clothing or temporary dressings are cut away and he is transferred to the operating table which has been covered with sterile sheets. The patient's weight is estimated and the type, extent, and depth of the burn are charted. A vein should be opened and blood taken for hematocrit determination and to establish a base line for comparison. A polyethylene vein catheter should be inserted and colloid infusion started before venous collapse occurs. In children, if a cut-down is not practical, intrasternal infusion should be employed.

Primary dressing can then be begun, but treatment of shock must be carried out concurrently since application of a perfect local dressing is of no value if the patient dies from shock. Shock is most profound in infants (below 2 years of age) and in the aged (60 or above). Burns in children covering 20 per cent or more of the body surface are considered critical. In the aged, burns involving more than 30 to 45 per cent of the body surface are almost invariably fatal, owing to circulatory changes which make it difficult to adjust fluid and electrolyte therapy.[3]

Decision is made as to whether open or closed treatment will be used. In either case, two men scrub and don sterile gowns and gloves and a mask is put over the patient's face and mouth, since the burn area is especially susceptible to respiratory-borne infection. The area is gently cleansed with bland liquid soap or Acidolate and rinsed with copious amounts of sterile water. Minimal débridement is done by breaking blisters, washing away grit and debris, removing grease with ether, ether-soap, or benzine, and gently cutting away loose skin.

If open treatment is to be used, the patient is put to bed in a room with a temperature of 75 F. Sterile sheets are placed on the bed with a canopy of sterile sheets over it. The doors and windows of the room must be suitably screened. The burned areas are permitted to crust over and are not touched until they

crack open, at which time dressings must be applied. This method is best suited for burns that involve only one side of the body; it cannot be used on circumferential burns, because lying on the burn constitutes a dressing method and crusting fails to occur.

The closed method is still the most adaptable and widely used procedure, except in mass disaster where saving of time and expense makes exposure advantageous. Fine mesh No. 44 dry gauze, moistened with saline or impregnated with Vaseline or 4 per cent Xeroform in Vaseline, is placed in contact with the burned surface. If available, surgical rayon (Owen's fabric) may be used in place of fine mesh gauze. It is convenient to have this material stored in strips 3 inches wide by 12 inches long. By applying slightly overlapping strips smoothly, the burned surface can be covered by a single layer which will permit exudation of fluids but inhibit granulation.

Next to the protective dressing I apply several layers of humid gauze (4 by 8 inch gauze lightly wrung out in sterile saline and opened up lengthwise). A moist dressing will not slip, but a dry one will. An absorbent layer is next applied; Kurlix rolls are ideal for this purpose, since they are soft and can be applied evenly without constriction. Plumber's waste is put into any irregular areas such as the axilla, popliteal space, or about the neck, but it must be well loosened to distribute pressure evenly without obstructing circulation. The external bandage consists of carefully overlapped elastoplast, which makes a firm nonconstricting dressing that is elastic and comfortable in every respect. Bias stockinet is cheap and can be used in place of elastoplast. Joints requiring movement are splinted in a functional position. Extremities are elevated to control edema.

Allen[4] and Harkins[2] advise that this dressing not be disturbed for 6 to 10 days, when it is changed down to the last layer of gauze or grease gauze. Removal of this layer causes unnecessary trauma to the surface, and unless there is sloughing and necrosis, it is prudent to leave this protective layer undisturbed for another 7 days until healing is complete. All first-degree and superficial second-degree burns and most deep second-degree burns will be healed by the fourteenth day. If cared for properly, the remainder of deep second-degree burns will heal by the twenty-eighth day with thin epithelium which tends to contract and scar.

Third-degree burns, on the other hand, are areas of full-thickness loss. They are gray or pearly white and devoid of sensation. They begin to slough with liquefactive necrosis and infection, and result in a granulating surface. The protective layer of gauze is removed from third-degree burn surfaces so that underlying necrotic tissue can be removed or excised. Active sloughing is usually complete by the fourteenth to the twenty-first day, and separation can be hastened by surgical excision to permit early skin grafting.

The early treatment of shock

As previously stated, this begins concurrently with the initial dressing, and even before if possible. Primary and secondary shock account for 60 to 70 per cent of burn deaths.[5] Primary shock occurs when the burn is acquired and lasts 1 to 2 hours. It is replaced by an overlapping period of secondary shock which lasts about 48 hours. Burn shock must either be controlled or improved during the first 48 hours; otherwise death will occur. Initial shock occurs from local capillary injury. Secondary shock results from regional loss of plasma and destruction of erythrocytes by the heat of the burn. It is manifest by rapid pulse, falling blood pressure, reduced pulse volume, thirst, coldness of the extremities, collapsed veins, and mental changes.

If the patient is vomiting, all fluids should be given intravenously. If not, water is not given, but an electrolyte solution (Moyer's[6] burn preparation) is given by mouth. It is prepared with sodium chloride, 3 to 4 gm. or 1 level teaspoonful; sodium bicarbonate, 1½ to 2 gm. or ½ level teaspoonful; and iced drinking water, 1 liter.

It must be remembered that even though the hematocrit, erythrocyte, and hemoglobin values all rise because of the severe loss of plasma and blood volume, erythrocytes have been destroyed and hidden anemia exists. In addition, there is the factor of edema, which represents an increased accumulation of extravascular fluid from damaged capillaries. Local edema may accumulate as much as 10 per cent of the body weight in severe burns.[3] To correct these factors, the best agent is whole blood. Adults may require as much as 2,000 cc. of whole blood in the first 24 hours, and children need proportionately large amounts. Dextran or other volume expanders can be used if blood is not available. If more than 2 quarts of blood are needed, the excess should be replaced with Dextran. The simplest rule to follow is that of Harkins:[7] "A useful clinical rule which still has considerable value is that one should administer plasma expander (whole blood, plasma or Dextran) in a dosage of 100 cc. for each point that the hematocrit exceeds the normal of 45." Another extremely accurate rule useful in estimating loss is the rule of Evans:[8] "1 cc. of plasma per kilogram of body weight (plasma substitutes or whole blood) for each per cent of body surface burned, during the first 24 hours. Half this amount is given during the second 24 hours."

Regardless of which rule is followed, an equal quantity of electrolyte, Ringer's lactate, or 0.7 per cent sodium chloride solution is given concurrently or following blood administration. Blood chemistry studies to determine balance of sodium, potassium, and chlorides and the carbon dioxide combining power are made every 4 to 7 days. Catheterization of the patient as soon as possible is important to assist in accurate estimation of fluids. Hourly measurement of urinary output should follow thereafter, 40 to 60 cc. per hour being considered adequate. Fluids should be curtailed if the output rises above 100 cc. and increased if it falls below 30 cc.

Tetanus prophylaxis should be given all patients when burns are first seen. Dosage is 5,000 units of tetanus antitoxin, after a therapeutic test for sensitivity to horse serum has been made.

Penicillin is usually given initially for burns, 300,000 to 1,000,000 units daily. Culture and sensitivity test of the bacterial flora may indicate a change of antibiotic. Burns about the buttocks usually require additional therapy with streptomycin to control coliform bacteria.

Although the patient survives the initial and secondary periods of shock, he may nevertheless succumb to the effects of electrolyte and fluid imbalance during the intermediate period, or to infection and homologous serum jaundice in the late period. Intermediate care consists mainly of careful fluid and electrolyte control, combating anemia, and maintenance of nutrition with high protein and supplemental vitamin therapy. Skin grafting should be begun as early as possible. By utilizing surgical débridement, it should be possible to

graft the average burn in 14 to 21 days. Delay in this stage results in deformity and contracture with prolonged sepsis and complications.

Summary and Conclusions

1. A general plan of early care of burns during the most critical period has been discussed.

2. Factors entering into prevention and control of primary and secondary shock, which account for 60 to 70 per cent of burn deaths, have been discussed.

3. The treatment of severe burns by a cooperative team effort has been presented.

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References

1. Owens, N.: Thermal injuries, in Cyclopedia of Medicine, Surgery. Specialties, edited by G. M. Piersol. F. A. Davis Co., Philadelphia, vol. 13, pp. 873-904.

2. Harkins, H. N.: Management of patient with severe burns. S. Clin. North America, 34:1313-1320, Oct. 1954.

3. Kaye, B. B.: Burns: an outline for treatment. Am. J. of Surg. 92:123-138, July 1956.

4. Allen, H. S.: Treatment of burns. S. Clin. North America 32:335-340, Feb. 1952.

5. Harkins, N. H.: Treatment of burns and freezing, in Surgical treatment of soft tissues, edited by F. W. Bancroft and G. H. Humphreys. J. B. Lippincott Co., Philadelphia, 1946, pp. 169-236.

6. Moyer, C. A.: Fluid balance; clinical manual. Year Book Publishers, Chicago, 1952, p. 155.

7. Harkins, H. N.: *Op. cit.*, ref. 2, p. 1318.

8. Evans, E. I.: Treatment of high intensity burns. Arch. Surg. 62:335-349, March 1951.

Additional references

Artz, C. P., *et al.*: Burns, in Surgery of trauma, edited by W. F. Bowers. J. B. Lippincott Co., 1953, pp. 457-475.

Harkins, H. N.: Treatment of burns. Charles C Thomas, Springfield, Ill., 1942.

Moyer, C. A.: Treatment of severe thermal injury; its development and accomplishments during past century. West. J. Surg. 62:107-120, Feb. 1954.

Seyfried, L. A.: Burns; outline of management. Bull. Michigan Osteop. A. 20:30-32, March 1955.

HERNIATIONS

of pelvic and urogenital diaphragms

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BETTER UNDERSTANDING and appreciation of the anatomy and physiology of the pelvis; the great advances in surgery—asepsis, new technics, better anesthesia, improved sutures; the use of antibiotics, and more intelligent preoperative and postoperative care have done much to reduce the number of women who, because of herniations of the pelvic and urogenital diaphragms, suffer discomfort or misery.

Pelvic anatomy

The pelvis is the anatomic area bounded in front and on the sides by the innominate bones and behind by the sacrum and coccyx. This paper is especially concerned with the inferior pelvic area, or outlet, namely, the pelvic and urogenital diaphragm. It is generally understood that an arbitrary line between the ischial tuberosities separates these two areas. There is sufficient difference in the anatomy, physiology, and functions of these diaphragms that each must be given individual consideration. However, disturbance of one area generally involves the other. It is, therefore, of greatest importance that both regions, as well as the important structures of the internal pelvis, especially those concerned with support, be given careful consideration in this discussion.

The pelvic organs are maintained in normal position by: pelvic muscular diaphragms consisting of the levator ani and coccygeus muscles for superior support; the transversus perinei, bulbocavernosus, and ischiocavernosus muscles for inferior support; connective tissue diaphragms made up of fascial sheaths and connective tissue structures; and internal supporting structures.

Pathology

Lesions which may result in herniation are muscular, connective tissue, neurologic, internal pelvic (tumors, et cetera), and intra-abdominal pressure.

Lesions of muscle and connective tissue are generally due to tearing, shrinking, or atrophy. Neurologic lesions involve the central nervous system or congenital malformations. Lesions may be further classified as to the anatomic area primarily involved.

1. Bladder: cystocele and urethrocele.
2. Rectum: rectocele and enterocele.
3. Uterine prolapse.

All three may coexist. Anterior herniation is rarely seen without accompanying persistent lesions—the reverse may be true, but in that situation evaluations should be carefully made.

Etiology

In the vast majority of cases, the cause is injuries of childbirth—pressure, stretching, and tearing. Pressure injuries are limited in scope. They are usually only temporary and rarely have sequelae. Stretching and tearing are the devastating and lasting troublemakers and often their nefarious results are not evident until years after the initial lesion.

In defense of the obstetrician, it must be said that at the time of delivery he probably is faced with the problem of a large baby, a relatively small passage, poor muscle tone, an exhausted patient, et cetera. The repair which he makes under these conditions heals poorly or not at all, or he may make the most meticulous examination and find little or no evidence of tearing. Because of stretching, tissues do not regain their former tone, and it is several weeks before the ultimate result can be determined. There is, however, little or no defense for the obstetrician who fails to make a subsequent examination and tell the patient or

family the true situation. A few moments spent in clarification at this time may save much time and embarrassment later. One must not overlook the possibility of other lesions in these cases. Tabes or similar conditions may not be the sole etiologic factors but may be definite contributing factors in bladder and urinary problems; certainly they are of utmost importance in consideration of treatment. Pelvic tumors and intra-abdominal pressure also may be primary or contributing factors.

Diagnostic evaluations

It is not always easy to evaluate the effect such herniations may have on a patient's over-all health. Symptoms may be variable and difficult to interpret. Frank bladder disorders, in the presence of urethrocele or cystocele, are no problem, but persistent backache or other reflex manifestations may or may not be influenced by such a condition. In these cases my procedure is to make a complete survey of the patient, evaluating signs and symptoms and differentiating between diagnoses.

It is only good judgment to postpone radical or surgical treatment until an accurate evaluation can be made. A procedure that may be justifiably and satisfactorily followed is one in which it might be said that a surgical procedure is simulated. For example, in the patient who has uterine prolapse of 1 or 2 degrees that appears to cause sufficient trouble to justify surgery, a support is inserted which provides the correction which would be sought if surgery were undertaken. If the symptoms are relieved, I feel justified in proceeding with the operation. If symptoms persist, I reconsider the diagnosis. Possibly there is moderate cystocele, which many times has been sufficiently relieved with a properly fitted pessary to justify resorting to surgery for permanent recovery.

Procedure

All such hernations are surgical cases, but all are not and should not be operated upon. Even cases of mild cystocele or prolapse, without symptoms, may be treated conservatively. Possibly the patient may desire to postpone operation until after further childbearing. In the elderly, palliative measures may be desirable. Severe diabetes may be a contraindication to surgery. Asymptomatic patients should be observed periodically. In certain elderly patients proper fitting pessaries may be comfortable and provide satisfactory results. The newer plastic pessaries, the greater ease of proper fitting, and the "folding" types are boons to conservative care. Neither the physician nor the patient should become impatient or discouraged if several fittings or adjustments should be required before satisfactory support and comfort can be obtained.

Treatment

Instead of attempting to discuss, even briefly, the various operative procedures and technics, I shall mention certain basic principles.

It is almost universally true that herniations of the anterior urogenital area also involve the posterior area, and repair of the former demands repair of the latter. However, in repair of perineal herniations, too frequently anterior herniations are overlooked or neglected.

A long incision is essential for repair. A short repair in both the anterior and posterior areas is of little or no value.

It is important to keep in mind that the fascia, not the muscle, gives strength; muscle gives pliability and supporting structure.

Preoperative care in these cases is of greater importance than is usually conceded. Many herniations repaired immediately after injury heal poorly because the tissues are congested, and the patient is in a general state of depletion. Recovery is not delayed by placing a patient on a routine general regimen for a period before surgery, particularly since these operations are generally elective and rarely emergencies. If true evaluation could be made, it is reasonably certain that results of operation on properly prepared patients would be far better than results following operation on patients whose preoperative care was not so complete.

Preoperative care should include:

1. Treatment of local, seemingly innocent infections, such as cystitis, vaginitis, and cervicitis.
2. Physiotherapy, including douches, tamponade, sitz baths, et cetera.
3. Directed exercises.
4. A good systemic regimen.

Postoperative care

The value of early ambulation has at last been learned, but too frequently other equally valuable postoperative procedures are overlooked. Some of these are:

1. Immediate bladder care (retention catheter technic is preferable to catheterization).
2. Psychotherapy.
3. General care—weight reduction and abdominal support are most important.
4. Special attention according to type of operation, such as use of a perineometer (Kegel's perineometer technic) following anterior hernial repairs.

Summary

There has been no effort in this brief paper to attempt to cover this important subject completely, but I have endeavored to emphasize the importance of a better understanding of anatomy and physiology, preoperative diagnosis, elective timing, adequate preoperative and postoperative care, and selecting the proper procedure.

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References

Bashor, E. G.: Some points in operative gynecology. J. Michigan Soc. Osteop. Obst. & Gynec. 2:33-34, July 1954.

Curtis, A. H., and Huffman, J. W.: Textbook of gynecology. Ed. 6. W. B. Saunders Co., Philadelphia, 1950.

Fletcher, P. F.: Abdominal colpocystopexy for complete prolapse of vagina and bladder; rectus suspension principle of crossed-suspender support. Am. J. Obst. & Gynec. 56:41-59, July 1948.

Kegel, A. H.: Progressive resistance exercise in restoration of perineal muscles. Am. J. Obst. & Gynec. 56:238-248, Aug. 1948.

Overstreet, E. W., and Hinman, F., Jr.: Some gynecologic aspects of bladder exstrophy with report of illustrative case. West. J. Surg. 64:131-137, March 1956.

Phaneuf, L. E.: Management of prolapse of uterus and vagina. in Progress in gynecology, edited by J. V. Meigs and S. H. Sturgis. Grune & Stratton, New York, 1950, Vol. 2.

Shaw, H. N.: Prolapse of vaginal vault following hysterectomy; new method of repair; presidential address. West. J. Surg. 56:127-133, March 1948.

Shaw, W.: Textbook of operative gynecology. Williams & Wilkins Co., Baltimore, 1954.

Te Linde, R. W.: Operative gynecology. Ed. 2. J. B. Lippincott Co., Philadelphia, 1953.

Ward, G. G.: Operative technique for repair of retocele and injury to pelvic floor. Surg. Gynec. & Obst. 48:399-403, March 1929.

The
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Editorials

Unshackled

The profession of osteopathy is well nigh unshackled. The process by which this has been accomplished has been one of continuous education and information of intelligent and informed groups, otherwise unaware of the purpose and place of the profession in meeting the health needs of the people of the United States. Osteopathy has never asked in the past, nor does it ask today, to be accorded special privileges. It seeks only the opportunity to make its competence known, not by what it says or claims, but by opening ways to an investigation and study of the sources by which its competency is established, the investigation to be made by those who are uninformed, that they may satisfy themselves that the profession's claims should not be denied.

A dramatic example of such an investigation and study and its subsequent documentation has just come to light—release by the United States Government Printing Office of a publication entitled "Appointment of Doctors of Osteopathy as Medical Officers. . . . Hearings . . . on H.R. 483." The result of the study is well known: provision by the 84th Congress for the appointment of doctors of osteopathy as medical officers in the Armed Forces. Information opened a door long barred.

Every issue of THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION now bears evidence of the profession's unshackling in a total different area—that of its own advertising pages. The publication of a medical periodical has long represented a cooperative economic endeavor between medicine and ethical pharmaceutical and medical and surgical supply manufacturers. For years, however, cooperation with THE JOURNAL was scarcely more than token in character. Now, within a readily measurable period—5 years—advertising has more than doubled. On the surface, it would appear that there has been a revolutionary change in the attitudes of manufacturers or a phenomenal increase in professional competence, or both. Basically, there has been neither.

What then is the answer to what may seem an about-face in two groups? It is a simple one and so typical of the American way of life that there are many to whom it will not occur. Drug manufacturing, as an example, is a business; unashamedly, it is business for profit. That, too, is American and basic to our unparalleled growth and prosperity as a nation. Ethical drug manufacturing is also a business which has set up for itself the highest standards of business practice. It is a business that has been so influenced by the social implications of medical ethics that in turn these manufacturers have become a positive force assuring better medical practices to the public. There was a period in JOURNAL history when many well-known and highly ethical pharmaceutical firms, in effect, boycotted it. That day is past. It is past, but not because the osteopathic profession has suddenly become professionally competent, whereas it had been incompetent. The change has come about because the profession chose to *unshackle itself*. It did this by providing a completely objective and accurate picture of the practices and the buying power of osteopathy. The profession created an opportunity by which a great key group in American life could educate and inform itself; that group was the medical market. Thereupon, prejudice, lack of recognition, and misappraisal of osteopathy were dropped like out-worn garments.

This particular development needs reviewing as a case at point on a method of unshackling. On June 1, 1954, following a 6-months' survey, Market Facts, Incorporated, a leading independent market research firm, released the results of a nation-wide survey of the osteopathic profession which it had just completed. Its findings were incorporated in a brochure entitled "A Study of the Buying Power and Practice of the Osteopathic Profession." The conclusions of the researchers were not questioned by those hitherto skeptical and conditioned to doubt. On the other hand, the American Osteopathic Association asked for no special consideration for this report. It made no extravagant claims of the profession's potential worth to ethical manufacturers; it simply said that for the first time the facts about the osteopathic movement in medicine as they relate to the medical market were available to those interested. The interest was widespread, not only upon

the part of those that the profession had long known as friends and supporters, but of many more who had appeared, biased, unfair, and even fearful of any forthright relation with osteopathy. True, most of these manufacturers had long made their products available to the profession, but had not offered them on the open market—the advertising pages of the profession's official scientific periodical, THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION. It appeared to the profession that it was being boycotted, probably because of the fear of certain ethical firms of a possible boycott by other healing art agencies. Actually, as a profession, we had failed to give those who did not know us an opportunity to become acquainted. Our communication had been only with ourselves.

What has occurred in our advertising pages is simply the result of our willingness to have our position and our status examined. Today THE JOURNAL has become the cooperative economic endeavor it was destined to be. This was made possible by an investigation, study, and documentation of osteopathy from *within the profession*. Osteopathy has permitted itself to be further unshackled.

In 1952, the profession cooperated down the line with the President's Commission on the Health Needs of the Nation. That made it possible for the Commission, in its five-volume report, "Building America's Health," to establish the fact that any serious consideration of the health problems of the nation must include osteopathy. Similarly, the 1951-1955 A.O.A.-A.M.A. conferences resulted in the 1955 on-campus observations of osteopathic education. Out of the resultant survey came documented values that carry a finality not invalidated by any politico-economic action.

We no longer have the right to stand off from the many groups that are looking for help in providing better health care for the American people. And there is but one way by which we can ally ourselves with these groups. The pattern is unmistakable—identification of ourselves.

The next move planned for osteopathy's unshackling lies in the future and is a far-reaching one—the formation of a National Citizens' Committee. A lay group made up of advisors of stature and broad experience would enable the profession to improve and enlarge its public services in medical education; patient health care; and research in fundamental and clinical medical services, especially directed toward control of the disease process and the rehabilitation of the disabled.

Support of higher education has become a concern of America, and an important activity of laymen representative of the major socio-economic forces of our society. Organizations have been developed through which this concern may be channelled, such as the Council on Financial Aid to Education. The osteopathic profession has had for a number of years an intraprofessional agency to forward the objectives of its educational program—The Osteopathic Foundation. Formation and activation of a National Citizens' Committee, with members willing to serve as directors of The Foundation, replacing its D.O. directors, would free The Foundation and make possible its utilization as an agency pledged to the advancement of osteopathic education and research as a part of a concerted move to support higher education. Within such a framework, osteopathy would no longer speak for itself alone, but for its worth as a movement alongside others pledged to better health care for the nation.

Taken together, the happenings discussed here and others not named constitute an unshackling of the osteopathic profession as it steps forward upon a work-a-day basis to accept the challenges society imposes upon it.

Orel F. Martin

The organizational achievements of Dr. Orel Martin in the latter part of his life were so distinctive as to overshadow his professional stature, but it should be remembered that first he was a physician and surgeon meriting the high praise contained within the fact that he had proved himself worthy of his vocation—that of osteopathic physician. And being a particular kind of physician was a matter of deep significance not only to himself, but to a profession encompassed by his era of organizational service, the American College of Osteopathic Surgeons, and the scores of young osteopathic surgeons who have been trained during the past 15 years.

No tribute need be paid Dr. Martin to remind the now five surviving members of the ten founders of the College of Osteopathic Surgeons of the role of this leader in its growth and development. They can bear witness to a period of service and to accomplishments scarcely exceeded in organized osteopathy. That witness could be supplemented by the testimony of men who have come more recently to the fore in College affairs. For with lessening physical strength, there came no dimming of the man's vision; no slack in his determination; no compromise with the standards he set for himself, for his profession, or for the organization that he made his life.

Although THE FORUM, in a biographical sketch of Dr. Martin, named many of his activities and contributions, it by no means exhausted them; no listing could develop the meaning of this man's life. The contribution to his profession which seems destined to live long after his contemporaries have passed away and they and he are forgotten is a far more subtle thing. This does not imply that creative, devoted, and dedicated organizational leadership of a trail-blazing kind is of small moment.

One cannot disparage the fact that it was largely Orel Martin who gave form and substance to the College of Osteopathic Surgeons, until it became the body that it is, exerting a tremendous influence professionwise and wielding power for good as a medical organization. To one of his contemporaries, however, it seems that the organization which this man so largely built and the activities that wore him down were but way stations toward an ideal which he never forsook nor, insofar as possible, permitted others to betray—the ideal of the physician-surgeon technically qualified and morally capable of assuming the responsibilities of his

vocation. Dr. Martin must have taken for his own the dictum of Robert Louis Stevenson, "There are men and classes of men that stand above the common herd . . . the physician almost as a rule. He is the flower of our civilization." This ideal gave him no peace as he watched over and jealously guarded a maturing college of surgeons and kept it directed toward the basic purpose of any specialty college—that it be a teaching institution. It was to the same end that he rendered yeoman service to the cause of certifying boards, especially the Board of Surgery—that so far as is humanly possible, the capacity of men might be accurately measured against the responsibility they seek to exercise.

It is for such a reason that the impact of Orel Martin is destined to far outlast him and his contemporaries, even to a day when he and they shall be unknown. But men will be better doctors and surgeons then, because in the formative years of his profession he refused to place in jeopardy the standards that men must meet, or be disciplined to meet, or judged beyond their ability to meet.

Optimal nutrition

A significant paper entitled "A Concept of Optimal Nutrition," by W. A. Krehl, Ph.D., Department of Biochemistry, Yale University School of Medicine, was published in the November-December, 1956, issue of *The American Journal of Clinical Nutrition.* The author visualizes "optimal nutrition . . . as that which maintains a level of metabolic normalcy so that when the organism is exposed to stress, the normal protective homeostatic mechanisms can be put into operation rapidly, with a minimum of strain, and for as short a time as possible." He develops the role of optimal nutrition as it relates to the Selye concept of the general adaptation syndrome, pointing out "that various and complex adjustments in metabolic patterns enable man to function over a fairly wide range of environmental stress and still remain in the 'zone of homeostasis.' "

The concept of homeostasis in its broader ramifications has been related by certain osteopathic investigators and writers to the fundamental principles of the osteopathic approach to health and disease. In the Krehl paper the waxing and waning of the protective homeostatic mechanism related to the age of the individual from childhood to old age is shown by means of a diagram, which reveals that the zone of homeostasis in the individual finds its level of normalcy continually encroached upon by an encompassing zone of pathology.

The author's primary concern in this article is to emphasize the part that nutritional intakes at levels below the optimum may play in the production of disease states—a problem apart from that of nutritional difficiencies per se. The nutritionist knows that protein is the focal point "in the constellation of nutrients which comprise the cell's protoplasm." The article should be carefully studied by every osteopathic physician, not only for its specific values, but especially for its fundamental medical concept—man seen in a state of health or disease, the balance of which can be profoundly affected by nutritional factors.

Granting the weight of nutritional factors, the doctor of osteopathy would attach special importance to the unfavorable factors arising in the musculoskeletal system which may influence profoundly the balance between health and disease—in the practice of modern medicine both sets of factors are largely discounted.

The Krehl paper is one of a series read at the Conference on Optimal Nutrition, Its Analysis and Application held at the George Williams College, Chicago, April 8-9, 1955, six of which are presented in the same issue of *The Journal of Clinical Nutrition.* The Conference examined the whole role of nutrition within as broad a framework as can be visualized today. Optimal nutrition was related to optimal health—not a simple problem since so little is known about how to measure health.

Papers read at the Conference dealt with subjects ranging from such fundamental research projects as "The Nutrition of Isolated Cells from Vertebrates" to clinical studies on new technics in the management of severely burned patients. Special reference was made to a new type of high protein supplemental feedings that apparently were the key to the unusual results secured.

The interest of the participants was not in a standardized approach to the problems of *malnutrition* related to a disease or a group of diseases, but to the possible restriction of physiologic potential by suboptimal nutrition. The Conference itself and the group of papers that was presented there may mark the beginning of more serious consideration by scientists and clinicians of how to achieve a high level of health through optimal nutrition.

Population dynamics

Again the Department of Health, Education, and Welfare has rendered a service to physicians, this time by making available its recent report, "Health and Demography." Demography deals essentially with *populations* in terms of trends revealed by study and research; total numbers and numbers related to countries, to States, and to regions; population characteristics by age and marital status; the economic situation of various groups; and diseases which afflict various age groups and the consequent death rates from various causes. All this and more put in terms of statistical data may seem deadly dull to the doctor concerned with human beings and not figures. Things that happen to the patients, however, grow out of the human situation, and that can be understood only in terms of the dynamics of a given group. The connection between what happens to populations and the building of meaningful public health programs is one involving a direct relationship.

The data growing out of these population studies is presented in the H.E.W. report in chart and table form, each with a brief commentary, so that the reader can bridge the gap between the masses of facts and the

programs in which he may be a participant. A study of these basic facts, graphically presented, will enable the young physician to understand why his profession is primarily social in nature and that more and more his concerns will be with groups if he is to deal intelligently with the individuals for whom he is responsible.

In a postscript to "Health and Demography," its author, Halbert L. Dunn, M.D., Chief, National Office of Vital Statistics, quotes Dr. Lowell J. Reed who, in a memorable paper,[1] pointed out that "the traditional emphasis on preventing and treating disease has 'left the implication that health is the mere absence of disease.'" People, and doctors generally, have long acted as though persons without clinical pathology are healthy. Dr. Dunn grants that the mere absence of disease no longer connotes health to informed people, but he suggests that the concept of "positive health" has little practical use because no adequate scientific effort has been made to identify what is meant by the term. Such data as is presented in "Health and Demography" is a beginning toward a scientific approach to the measurement of what is meant by health and how it is lost or maintained. Dr. Dunn, in the Postscript to the report, goes on to stay:

> It is highly probable (though not fully demonstrable) that a considerable range of disease—from serious ailments like ulcerative colitis and hypertension, to non-disabling disorders like chronic constipation, dull headache, and fatigue, to the subclinical states that keep people at some point short of positive health—arises from the life situations of the people affected. The source is seldom the present situation alone, but more probably the whole series of the individual's interactions with his environment and other people, stretching perhaps from infancy to the current set of problems and frustrations.

Physicians who are interested in "Health and Demography" will want to read an article entitled "Public Health Begins in the Family," written by Dr. Dunn and Mort Gilbert, publications officer. This article discusses the family from a public health standpoint, seen not merely as a social unit, but epidemiologically. Much of the data for such a paper grows out of the facts and figures made available by demographic research.

The physician has always been and largely still is the health advisor and consultant of the family. Studies such as those considered here and others of related nature foreshadow the doctor of tomorrow as one who will be increasingly a public servant, because he is destined to become more the scientist, social worker, and educator. Such sources as are quoted here are a part of his education.

1. Reed, L. J.: Principles applying to the collection of information on health as related to socio-environmental factors, in Backgrounds of social medicine, Milbank Memorial Fund, New York, 1949.

Notes and COMMENTS

Role of accident in premature death

ACCIDENTS ARE becoming competitive with cancer as a cause of death before age 65. The greatly increased chance of surviving from birth to age 65, if compared with the chance at the turn of the century, places death before age 65 in the premature category, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. On the list of premature killers, major cardiovascular-renal diseases far outranked all others. The chances are more than 150 per 1,000 that a white male will succumb to these diseases before age 65. These diseases aside, malignant neoplasms move into second place, with a little overe 50 per 1,000 chances. Accidents then pick up the role for the white male, lagging but little, with 40 per 1,000 chances of life-loss by accidental death prior to age 65. The *Bulletin* again emphasizes how rarely today infectious diseases are a cause of premature death. For example, currently, the chances are less than 6 per 1,000 that a newborn white boy will die from tuberculosis before reaching age 65. It would seem that the control of premature death now depends largely upon successful control of cardiovascular-renal diseases, cancer, and accidents.

The 1956 year's end holiday deaths, especially death on the highway, dramatizes the motor vehicle as the factor beyond control. The National Safety Council, of which the American Osteopathic Association is an agency member, in its 1956 Annual Report, points to 38,300 traffic fatalities in 1955, an 8 per cent increase over 1954. It is estimated that the 1956 fatalities will show more than a 10 per cent rise over 1955, an estimated 42,000. On the basis of scientific statistical study, the Council predicts a 54,000 traffic-death toll in 1966. Apply the same type of analysis to medical causes of premature death, and one may conclude that a probable reduction of the premature death toll medically may well be cancelled out by the rapid and thus far uncontrolled rise in motor vehicle deaths.

Exactly to the same point but sharpened concretely are the facts released in a recent *United States Navy Medical News Letter*. Under the heading, "Take It Easy," the Navy and Marine Corps report motor vehicle accidents in 1955 outnumbered deaths from disease by more than 2 to 1—a total for the year of 601 young, healthy men. In addition to the sudden deaths, there were 7,782 hospital admissions due to traffic smashups, with each survivor remaining on the sick list an average of 41 days. The Naval officer reporting these facts put the case for probable premature death sharply:

> Don't take the attitude that "It can't happen here." This is the most fallacious of all fallacies. It could happen without notice to you or to the members of your family and it might happen just once. . . .
>
> Don't try to go too far, too fast, in too short a time. The

dice are loaded and the cards are stacked against you before you start. . . .

Premature death from whatever cause is a charge upon the physician and upon his medical institutions. The time has come when the doctor and the community hospital together should view the prevention of accidental death as much a responsibility as that of death from disease. It is becoming a much greater factor in death before age 65 than are many of the diseases about which doctors are exercised. To put it on the basis of current concern, wherein is there any medical or social worth in saving a child of 10 years from polio to kill him between the ages of 20 to 24 years on the open highway? Premature death is less a social debt at 10 than at 24. Is prevention of premature death only a medical problem when it can be tagged by a disease name? Has medical specialization reached the point where "the fight for life," such as the National Safety Council makes, is not quite the professional thing? If medicine is not a total thing in relation to men, it is nothing.

Information on training programs in surgery

INFORMATION CAN BE obtained by osteopathic physicians interested in a preceptorship training program in surgery or any one of the surgical specialties by writing for a copy of "Register of Training Programs," American College of Osteopathic Surgeons, P.O. Box 474, Coral Gables, Florida. February 1 was the deadline for the receipt of applications from either preceptors or trainees for consideration by the Evaluating Committee this year, so that interested physicians will necessarily be looking to February 1, 1958, as the next possible deadline date for making such applications.

It is not too soon, however, to become acquainted with the policies which govern all osteopathic physicians who are interested. The four-page brochure is most explicit in its information. Only after careful study of the brochure and especially of the standard questions that are asked and answered, is the individual intelligently prepared to ask specific questions regarding his particular problem. Those who fail to acquaint themselves with the full requirements of an authorized training program and start an unapproved program will find their time and effort a total loss. The trainee should be certain that every step of his program has been approved and he has written evidence of that approval from the Evaluating Committee.

No departure from or modification of certain basic requirements is possible for any preceptorship training program which commenced after January 1, 1951.

How you can get more reading done

IT SCARCELY SEEMS possible that the doctor's most popular pick-up medical journal—*Medical Economics*—should ever be found among his unopened journals. It is more probable that he could miss one of its many short articles, such as a two-page description in the September issue of how one doctor solves the problem of keeping his desk uncluttered by unopened medical journals. At the same time this doctor does not miss reading articles in his field of interest—the secret, his aide was taught how to organize his "must" reading. See pages 191-192. The article itself proves why *Medical Economics* is no throw-away. It is the rare issue that does not contain indispensable information not found elsewhere.

Medicare identification system

MEDICARE (Dependents Medical Care Act) is completing a gigantic card identification system for its 800,000 dependents of servicemen not living at military installations—about 1,200,000 dependents live at posts. Estimated cost to the Treasury for the first year of Medicare will be $74,000,000. The December 1956 JOURNAL outlined, in brief, methods by which bills of physicians involved would be paid.

Facts needed about problems of tranquilizers

"MIRACLE" DRUGS HAVE A successor—the "tranquilizers." Evidence suggests that the widespread use of tranquilizing drugs (chlorpromazine, reserpine) may create new public health and social problems, so that society will find that it has momentarily exchanged one set of problems for another: an immediate good effect lost in a long-range effect that compounds the original problem. The problems that arose (and that continue to arise) from the indiscriminate use of the sulfonamides, antibiotics, and biologicals seem minor when put alongside the public health problem that could result from mistreatment of mental disorders—ills with which we are so poorly prepared to cope, medically or institutionally.

Periodicals, public affairs pamphlets, and other means of mass communication continue to hail tranquilizing drugs as opening a new era in psychiatry and a revolution in treatment. Fortunately, warnings that little is known of the good or bad effects of the drugs are now replacing the contention of some months ago that many patients are being "freed from the hopeless back wards of mental hospitals," news that came as an uncomfortable reminder of a similar kind of news of 5 years ago—advanced tuberculosis patients dancing in the hospital wards after having been given isoniazid. Little was said of the death of some of those patients a year later.

There are many reasons why the publication by the Public Health Service of Monograph No. 41, "Facts Needed to Assess Public Health and Social Problems in the Widespread Use of the Tranquilizing Drugs," is a timely and provident contribution to public welfare and also an informative warning to physicians. The Monograph is a careful and conservative study, not "for" or "against," but presenting the facts as known and considering the major problems that the wide avail-

ability of the tranquilizing drugs poses to psychiatrists and to allied professional groups working on the problem of mental illness and mental health.

Another problem is posed by the free and indiscriminate prescription by some general practitioners of tranquilizing agents as sedatives in nonpsychiatric cases where little attempt is made to determine more sharply the indications for the use of these drugs. The general physician who has little to guide him in the proper employment of the agents could profitably give this small monograph (30 pages) a half hour of his time. Single copies are available upon request to the Public Inquiries Branch, U.S. Public Health Service, Washington 25, D.C.

Notes in briefer form

OINTMENT AND lotions containing hydrocortisone acetate will not be exempted from prescription dispensing requirement despite the petition by ten pharmaceutical firms to the Food and Drug Administration. FDA in a release of January 17, 1957, summarized the available evidence as failing to prove that the drugs are safe for use without medical supervision. . . . FDA in another policy statement emphasized a long-held medical opinion that "stem-type and wing-type intracervical and intrauterine pessaries are dangerous to health, and regardless of the labeling, may be shown to be misbranded." These pessaries have long been used as contraceptives, but they are known not to be reliable. The decision to take legal action against them was reached as a result of a recent medical survey in which 92 per cent of the experts consulted regarded these devices as dangerous for use under any condition. . . . The effectiveness of drugs in treating heart disease is to be evaluated by a large scale clinical study under the auspices of the American Hospital Association. The initial study will be concerned with the problem of hypertension. The grant was made to Dr. Alan E. Treloar, Director of Research of AHA, by the National Heart Institute and amounted to $575,000. . . . Physicians interested in the role of serum lipoproteins in clinical medicine will be able to obtain reprints pertinent to research and its clinical application in this field by writing the Institute of Medical Physics, 1030 Sixth Avenue, Belmont, California.

DEPARTMENT OF PUBLIC AFFAIRS

DONALD M. DONISTHORPE, D.O.
Chairman

Bureau of Public Education on Health

ROSWELL P. BATES, D.O.
Chairman

Public health bills introduced in the 1957 sessions of the State legislatures

▶ SOME OF THE MORE significant bills introduced in the State legislatures this year which are concerned with the public health and the licensing of physicians are abstracted below.

ARIZONA

HCR 1—MEDICAL SCHOOL: Creates a joint committee to report on problems in establishing a graduate school of medicine in Arizona.

ARKANSAS

H 86—DOCTORS OF OSTEOPATHY: Relating to the State Board of Osteopathic Examiners.

CALIFORNIA

A 2359—CANCER CONTROL: Creating a Cancer Board and relating to the regulation and control of diagnosis, treatment, and cure of cancer.

GEORGIA

H 53—MEDICAL LICENSES: Relating to refusal or revocation of licenses to practice medicine, to authorize the Board to refuse to grant a license, to suspend or revoke the license of a licentiate; to authorize the suspension of the license of any mentally incompetent or insane licentiate. (Note: Has an injunction provision.)

H 107—OSTEOPATHY: Redefining the practice of osteopathy to authorize a licensee under Chapter 84-12 of the Code to practice osteopathy in all its branches including operative surgery, obstetrics, and the use of drugs according to recognized therapeutic practices.

INDIANA

S 83—HOSPITALS: To authorize county commissioners to create county hospital commissions to build hospitals and lease them for operation by charitable corporations; authorizes commissioners to issue bonds to pay costs.

IOWA

H 21—HOSPITALS: Permits hospitals to employ and bill patients for radiologic and pathologic reports.

MARYLAND

S 13—MEDICAL BOARD: Generally amending Art. 43 of the Code abolishing the Medical Board representing the Maryland State Homeopathic Society.

MASSACHUSETTS

S 99—OSTEOPATHIC COLLEGE: Resolve providing for an investigation by a special commission relative to the establishment of a state osteopathic college.

H 2444—STATE HOSPITALS: Requiring all state hospitals

to have a qualified hospital administrator certified by a fellowship or at least a membership in the American College of Hospital Administrators.

H 2446—MEDICAL PRACTICE: Providing for protection of rights and interests of the individual and of the community by defining certain minimum standards of behavior to be observed by all doctors and other researchists at all times during experimentation, tests, and trials upon human beings.

MINNESOTA

S 375—DOCTORS OF OSTEOPATHY: Amends Minnesota Statutes 1953, Sections 147.01, 147.02, 147.03; repeals Minnesota Statutes 1953, Sections 143.11 to 148.16 providing for the regulation of doctors of osteopathy by the State Board of Medical Examiners.

MISSOURI

S 26—NEW OPTOMETRY ACT: Section 13. Physicians or surgeons lawfully entitled to practice in this state pursuant to the terms of chapters 334 or 337 (Osteopathic Act) RSMO, are exempt from the operation of this act.

MONTANA

H 87—DOCTORS OF OSTEOPATHY: Permitting doctors of osteopathy to do minor surgery.

NEBRASKA

L 255—OSTEOPATHY: To change the scope of osteopathic license to include minor surgery with instruments, obstetrics, and use of drugs without restrictions.

NEW MEXICO

S 17—MEDICAL SCHOOLS: Relating to study of medicine; providing for allowance by Board of Medical Examiners of medical loans and scholarships to certain students.

OHIO

S 101—MEDICAL EXAMINERS: To create a board of registered medical and technical examiners to regulate and license medical examiners.

PENNSYLVANIA

S 16—TREATMENT OF CHILDREN: To amend the act of March 10, 1949 (P.L. 30) to excuse school children on written request for treatment by physician, optometrist, dentist, or osteopathic physician.

SOUTH DAKOTA

H 719—PHYSICIANS: Amends 27.0310, 27.0311, Code 1939, relating to physicians and osteopathic physicians. Gives the Board a right to suspension of license.

H 824—MEDICAL PRACTICES: To amend chapter 130 of the Session Laws of 1953 by adding a new section thereto, relating to prohibiting certain practices of the healing arts.

UTAH

S 50—MEDICAL PRACTICE: Provides for licensing of practitioners of medicine, surgery, osteopathy, naturopathy, or other healing arts.

S 51—MEDICAL PRACTICE: Establishes six classes of licenses for treating human ailments: (1) medicine and surgery, (2) osteopathy without surgery, (3) osteopathy with surgery, (4) naturopathy, (5) nonuse of medicine or surgery, (6) obstetrics.

S 76—PROFESSIONAL LICENSING: To provide for licensing, regulation of conduct and training of professions, trades, and occupations by the State Department of Registration.

S 88—BASIC SCIENCES: Relating to the educational requirements of persons practicing healing arts.

H 101—DOCTORS OF OSTEOPATHY: Permitting osteopathic physicians and surgeons to practice in hospitals.

WASHINGTON

S 82—HEALING ARTS: Relating to the practice of the healing arts with respect to practice of medicine, surgery, osteopathy, chiropractics, chiropody, and drugless therapeutics.

WEST VIRGINIA

S 66—PUBLIC HOSPITALS: Relating to County Public Hospitals.

S 80 (Same as H 126)—INSURANCE LAWS: Recodification of all state insurance laws. (Note: Includes hospitals and medical service corporations.)

WYOMING

S 30—MEDICAL EXAMINERS: To amend and re-enact Section 37-2005, W.C.S. 1945, fixing fees for application for certificates by Board of Medical Examiners, et cetera.

H 230—MEDICAL EXAMINERS: To amend and re-enact Section 37-2001, W.C.S. 1945, providing for the appointment of a Board of Medical Examiners, and to amend Section 37-2004, W.C.S. 1945, providing for examination of applicants for a license to practice medicine, extent and scope of examination, and time and place for same.

DEPARTMENT OF PROFESSIONAL AFFAIRS

ALEXANDER LEVITT, D.O.
Chairman

Bureau of Hospitals

VINCENT P. CARROLL, D.O.
Chairman

Functions of the Bureau

▶ The Bureau of Hospitals, one of the major agencies of the Department of Professional Affairs of the American Osteopathic Association, functions primarily in the evaluation of hospitals seeking approval for intern training, resident training, or registration by the American Osteopathic Association. In addition, the Bureau functions in the education of hospital staffs and administrative authorities by supplying information and articles on proper hospital procedures. At the time of hospital inspections, if the hospital so desires, the inspectors are always available to give information and suggest methods for meeting the standards and requirements for approval.

The Bureau also maintains a consultation service for hospitals, which has no relation to their evaluation for approval. Consultants are carefully selected by the Bureau, and the service can be obtained by applying to the Bureau Secretary. The hospital pays a fee for the service rendered by the consultant, who is actually working for the hospital and not the Bureau. The consultant's report and recommendations go directly to the hospital and are not made known to the Bureau.

It can be seen from the foregoing that the Bureau of Hospitals is not only an evaluating agency but also a service agency.

The philosophy under which the Bureau of Hospitals functions is based on insuring that the public hospitalized in osteopathic institutions receives the highest quality of osteopathic medical, obstetrical, and surgical care that can be rendered in accord with currently acceptable standards of practice. In addition, the Bureau aims to guarantee to the newly graduated physician or to the physician seeking advanced specialized training, the highest possible quality of internship or residency. Therefore, the Bureau's philosophy is primarily concerned with two major areas, namely, health care of the public and education of physicians. The Bureau requires high standards of performance before recommending an institution or training program for approval to the Board of Trustees of the American Osteopathic Association, which is the final approving authority.

The Bureau is composed of nine members. One is selected from each of the specialty colleges of surgery, internal medicine, obstetrics, and radiology to represent the four departments

required in hospitals seeking approval under Bureau standards. One is appointed from the Bureau of Professional Education and Colleges, and the other four are selected from the profession at large. The Bureau has the service of an administrative Secretary; the Secretary, the Chairman, and the Vice Chairman of the Bureau comprise its Administrative Committee.

In addition to the Administrative Committee the Bureau has the following committees: Committee on Code Books, Committee on Training Programs, Committee on Inspections, Committee on Manual of Procedures, a committee to study advisability and technic of establishing a national matching plan for interns, Committee on Review of Hospital Annual Reports, a study committee to evaluate functions and processes of the Bureau, Committee on Development of Interpretation Manual, and Coordinating Committee. These committees not only function during meetings of the Bureau, but they actually work throughout the year, gathering and studying material and preparing reports that are made to the Bureau at regular meetings or to the Administrative Committee between regular meetings if the need arises.

The Administrative Committee functions through the year and cares for and makes decisions relating to matters requiring attention between regular meetings of the Bureau. Primarily this Committee functions ad hoc, in order that the services of the Bureau may be available to the profession at all times; it does not alter or make policy without the approval of the entire Bureau.

The Committee on Code Books prepares, revises, and adds material to the minimum requirements and standards books which are three in number; one deals with registration of hospitals, one with approval of hospitals for intern and resident training, and one with hospitals other than osteopathic hospitals. This Committee, being charged with the responsibility of keeping the code books up to date, is very active. This is no minor task because of the rapid advances and changes in health care and the constant progress in the training of interns and residents. Changes in or additions to code books must be very broad in scope, yet so limited that there is no confusion as to meaning. This is necessary because the requirements and standards apply to hospitals and staffs of various sizes and in various locations. The Committee has always to keep in mind that the hospital must function for the greatest good of the patient and the locality and yet in conformity with the requirements and standards of the Bureau.

The Committee on Training Programs studies and evaluates the residency training programs submitted by the specialty colleges. In addition it stimulates the specialty colleges to keep their programs abreast of advances in medical knowledge and educational procedures. The Committee must always evaluate programs from the viewpoints of compliance with Bureau standards and ultimate educational value to the physician in training. A program deficient from either viewpoint is returned for revision, with advice as to changes that must be made to meet standards. A program that is restrictive and narrow minded in concept is also returned with suggestions for suitable revision. Programs that meet the standards and requirements are recommended to the Bureau to serve as guides or models in the evaluation of the specialty programs in the various hospitals.

The Committee on Inspections serves as a policy-making body, an advisory body, and an educational body. It formulates the policies and philosophies of hospital inspections and makes recommendations for their implementation to the Committee on Code Book. As an advisory body, it studies and evaluates procedures and methods of hospital inspections and advises the Bureau as to how the program of inspections can be improved, always keeping in mind that from the changes advised there will accrue maximum benefit to the patient and to the physician in training. As an educational body it has for the past several years conducted an annual 2-day school to train and indoctrinate physicians to serve on the voluntary inspection team for the Bureau of Hospitals. A faculty has been organized for this purpose and a course syllabus, which is revised as needed, has been set up. The Committee also revises the manual used as a guide for the inspection of individual hospitals.

In October 1956, a new position in the American Osteopathic Association was activated with the employment of a Director of Hospital Inspections. This position was instituted to fulfill a long-time need in connection with the annual program of hospital inspections. Over the years the program has been carried on by voluntary inspectors who have given most freely of their time and knowledge in this service to the public and profession. Voluntary inspectors are still needed and must be used to carry on the program, but it is felt that under the newly instituted plan demands on and sacrifices of the voluntary inspectors will be decreased. The Director of Hospital Inspections functions under the direction and supervision of the Bureau of Hospitals through the Committee on Inspections and is ultimately responsible to the American Osteopathic Association.

The Committee on Manual of Procedures has developed a manual to guide the functions and to aid in regulating the activities of the Bureau. This manual is not yet complete, because the work of the Bureau and its various committees covers such a wide range of activities. Furthermore, each year new problems confront the Bureau so that additions to and revisions of the manual are necessary, and they will continue to be necessary for a long time. The manual, however, does detail the duties of officers and the main functions of the Bureau so that it is particularly beneficial to new members.

The committee to study advisability and technic of establishing a national matching plan for interns has been working on this matter for several years. A great deal of time has been expended and much study has been given to this subject, but to date no satisfactory solution has been reached. Even if a solution had been reached, the problems of implementation and the facilities and manpower for implementation would still confront the Bureau. The committee continues its work and makes reports to the Bureau at regular meetings.

The primary function of the Committee on Review of Hospital Annual Reports is the preparation and revision of annual report forms which hospitals submitting applications for evaluation for registration or approval must file with the Secretary of the Bureau of Hospitals. Changing standards and requirements together with changing needs have necessitated much revision in these forms. In preparation for their use by the Bureau, the Secretary reviews these forms for completeness and accuracy. This is a painstaking task requiring great attention to detail and much patience. The importance of this one phase of the Secretary's work to the hospital and to the Bureau is appreciated by all who know and understand the problem.

The study committee to evaluate functions and processes of the Bureau has a wide range of duties and responsibilities. Its main purpose is to improve the functions and processes and to promote the efficiency of the Bureau. It accomplishes its purpose by recommending changes and improvements in procedures and advising the Bureau as to methods and means of improving its service to the public and to the profession. This committee covers all aspects of the Bureau's duties and functions, and also analyzes the work of all Bureau committees.

The Committee on Development of Interpretation Manual has accomplished a great deal in the relatively few years it has been functioning. The interpretation manual will define and clarify the meaning of the standards and requirements as set forth in the minimum requirement and standards books. In other words, it will give the Bureau's interpretation of standards and requirements and will indicate what hospitals must do to meet them. In addition, this manual will contain material on hospital staffs, boards of directors, administration, and intern and resident training which will be beneficial to the institutions.

Delay in completion of the interpretation manual has been brought about by several factors: First, it is a tremendous task to prepare such a manual and to have the material reviewed and approved by the Bureau. Second, the many new additions to the minimum requirements and standards books in recent years has necessitated many additions to and revisions of the interpretation manual. Third, much of the material to be incorporated in the manual must be extracted from the minutes of the meetings of the Bureau of Hospitals, a slow and painstaking task. Fourth, all material must be organized and arranged to coincide with the format of the minimum requirements and standards books so that it can be easily used as an interpretation guide.

The completed interpretation manual will not only be used by the Bureau in its deliberations and duties but will be made available to hospitals. This manual should be most beneficial to the profession, and the committee is working diligently to make it available at the earliest possible time.

A new committee of the Bureau, the Coordinating Committee, functions in conjunction with a committee from the Committee on Accreditation of Postgraduate Training. Their assignment is to so integrate the work of the Bureau and the Committee on Accreditation that the standards of each body will be essentially equivalent, hours spent in training will be equivalent, and time intervals of approval will coincide. The Bureau has responsibility for all residency programs, and the Committee on Accreditation has responsibility for all training programs other than residencies, that is, assistantships, preceptorships, et cetera. Both make recommendations for approval of programs to the Board of Trustees of the American Osteopathic Association.

With all of these committees and the numerous responsibilities of each one, it is readily seen that the Bureau of Hospitals is indeed an active and important organization, and one which constantly tries to improve its service. Each year the responsibilities of the Bureau increase, and each year it is confronted with new and more complex problems. All problems are carefully studied and all decisions are rendered only after deliberation by the entire Bureau. The time and effort expended by the membership of the Bureau merit the commendation of the entire osteopathic profession. The Bureau, however, is not complacent and it has no intention of becoming a static organization. It realizes that much work is yet to be done.

With the employment of a full-time Director of Hospital Inspections the Bureau anticipates rendering increased and improved services to hospitals and their staffs. Inspections are to be made throughout the year instead of being limited to a few months. This means that more time will be devoted to individual hospitals during inspections, and inspectors will have greater opportunity to be of service by taking time to explain findings, to discuss problems, and to make suggestions for the solution of problems. Thus, the educational service of the Bureau will be improved and increased.

The expansion of the inspection program over the calendar year will equalize to some extent the work of the Bureau at its two yearly meetings, thus making deliberations on individual hospitals more profound and yet permitting more time for functions that pertain to important committee work and new problems.

With the work and supervision of the Director of Hospital Inspections, it is anticipated that inspections will be more standardized and more thorough and that reports of inspections will be more detailed and informative. As in the past, voluntary inspectors will be utilized under the new program, but they will work in conjunction with the Director of Hospital Inspections and in many instances the inspections will be done by the Director and a voluntary inspector working as a team. On the basis of more detailed and standardized reports, the Bureau will be able to evaluate hospitals more accurately for recommendation for approval to the Board of Trustees. Further, the Director will be available at Bureau meetings to lend assistance and to supply additional information.

In recent years the Bureau of Hospitals has participated in the programs of the American Osteopathic Hospital Association at annual meetings. The Bureau has found these programs extremely beneficial and has good reason to believe that the Hospital Association has also benefited. The Association has been most kind in its expression of appreciation to the Bureau, and both organizations appear desirous of continuing cooperative activity.

The Bureau and Hospital Association realize that they have mutual problems and mutual interests and that by working together the tasks of each become less and the duties of each can be performed with greater wisdom and dispatch, yet without encroachment on or usurpation of delegated authority.

In order to further cooperation between the two bodies, committees from each have been functioning during the past several months and have held two meetings during that time. The most recent meeting was in Detroit, and its appeared that much progress was made. Mutual and individual problems were discussed with the utmost candor and with an exceptional air of understanding prevailing on both sides. These joint meetings are scheduled to continue, and in the near future it is hoped that a definite plan and program of coordination and integration can be established whereby the two organizations will be in a position to share information when it is pertinent and of mutual concern and interest. The Bureau is firmly convinced that such a program can and will be accomplished.

SUMMARY AND CONCLUSION

In summation, the duties, functions, responsibilities, and activities of the Bureau of Hospitals, as it operates under the authority delegated to it by the American Osteopathic Association through the department of Professional Affairs, have been outlined. The Bureau will continue to meet each new problem impartially and will strive to resolve these problems in accord with its stated philosophy of excellent patient care and excellent training programs for interns and residents. The reward of the Bureau for its effort is found in the constant improvements of osteopathic medical, surgical, and obstetrical care in osteopathic hospitals and in the increasing value of the training programs offered interns and residents. The entire osteopathic profession can be proud of the fact that osteopathic hospitals are growing in size and in number. This fact indicates public acceptance, which substantiates the work of the evaluation program of the Bureau of Hospitals.

DEPARTMENT OF PUBLIC RELATIONS

CHESTER D. SWOPE, D.O.
Chairman

Bills in Congress

▶ H.R. 2495—Mr. Roosevelt, of California. To provide for assistance to and cooperation with States in strengthening and improving State and local programs for the diminution, control, and treatment of juvenile delinquency. Establishes in Department of Health, Education, and Welfare a Federal Advisory Council on Juvenile Delinquency consisting of 21 members chosen from fields related to juvenile delinquency, such as education, law, child psychology, criminology, penology, sociology, and psychiatry, upon recommendations submitted by private volunteer organizations and professional associations, including, but not limited to, certain named organizations including the American Medical Association.

H.R. 2788—Mr. Berry, of South Dakota. To provide direct aid to States and Territories for educational purposes.

H.R. 2802—Mr. Frelinghuysen, of New Jersey. To establish a program of financial assistance to students in higher education.

H.R. 2807—Mr. Hardy, of Virginia. To amend the Act of June 21, 1950, relating to the appointment of boards of medical officers.

H.R. 2843—Mr. Vinson, of Georgia. To amend Title 10, United States Code, to provide for the transfer of commissioned officers between the Army, Navy, Air Force, and Marine Corps.

H.R. 3045—Mr. Hale, of Maine. To encourage the estab-

lishment of voluntary pension plans by self-employed.

H.R. 3075—Mr. O'Neill, of Massachusetts. To repeal the Alaska Mental Health Enabling Act.

H.R. 3103—Mr. Siler, of Kentucky. To amend the provisions of law relating to Federal grants for construction of hospitals to permit grants to governmental institutions only.

H.R. 3113—Mr. Trimble, of Arkansas. To amend the Internal Revenue Code to allow a taxpayer to deduct certain expenses incurred by him in obtaining a higher education.

H.R. 3114—Mr. Trimble, of Arkansas. To allow additional income tax exemptions for a taxpayer or a spouse or a dependent child under 23 years of age, who is a full-time student at an educational institution above the secondary level.

H.R. 3120—Mr. Wier, of Minnesota. Services to Older Persons Act.

H.R. 3208—Mr. Boggs, of Louisiana. To amend the Dependents' Medical Care Act to entitle certain retired members of the uniformed services to the same benefits as certain dependents of members of the uniformed services.

H.R. 3211—Mr. Bosch, of New York. To amend Internal Revenue Code to encourage establishment of voluntary pension plans by individuals, to promote thrift, and to stimulate expansion of employment through investment. Provides for withdrawment from restricted retirement funds by totally and permanently disabled contributors upon affidavit of a licensed doctor of medicine or osteopathy.

H.R. 3266—Mr. Fino, of New York. To extend benefits under Federal Employees' Compensation Act to persons injured while engaged in Civil Defense activities during World War II.

H.R. 3255—Mr. Teague, of Texas. To provide direct aid to States and Territories for educational purposes only.

H.R. 3268—Mr. Whitten, of Mississippi. To amend the Internal Revenue Code to remove the limitations on the amount of medical and dental expenses which may be deducted.

H.R. 3359—Mr. Bennett, of Florida. Child-Health and Welfare Amendments of 1957.

H.R. 3374—Mr. Cunningham, of Iowa. To encourage expansion of teaching and research in the education of mentally retarded children through grants to institutions of higher learning and to State educational agencies.

H.R. 3408—Mr. Reuss, of Wisconsin. Service to Older Persons Act.

H.R. 3415—Mr. Thompson, of New Jersey. Same as H.R. 3408.

H.R. 3485—Mr. Hoeven, of Iowa. To amend the Public Health Service Act to provide for research and investigation with respect to the cause, prevention, and treatment of multiple sclerosis and related neurological diseases.

H.R. 3495—Mr. Miller, of California. To encourage the establishment of voluntary pension plans by self-employed individuals.

H.R. 3507—Mr. Rains, of Alabama. Makes GI education benefits available to all veterans whether or not they served during a period of war or of armed hostilities.

H.R. 3516—Mr. Bates, of Massachusetts. Authorizes Walter Reed Army Institute of Research to award Master of Science, Master of Public Health, and Doctor of Science degrees in medicine, dentistry, veterinary medicine, and in the biological sciences involved in health services.

H.R. 3601—Mr. Anfuso, of New York. Provides income tax deduction for certain expenses paid by a taxpayer for the education of his children.

H.R. 3643—Mr. Perkins, of Kentucky. To provide for loans to enable needy and scholastically qualified students to continue post-high-school education.

H.R. 3752—Mr. Broyhill, of Virginia. To regulate the practice of physical therapy by registered physical therapists in the District of Columbia.

H.R. 3764—Mr. Dingell, of Michigan. National Health Insurance Act.

H.R. 3871—Mr. Walter, of Pennsylvania. Veterans' Children Scholarship Act.

H.R. 4131—Mr. Shelley, of California. Relating to the Federal estate and gift tax treatment of bequests and gifts to certain hospitals.

H.R. 4139—Mr. Staggers, of West Virginia. Requests President to mobilize cancer conference.

H.R. 4218—Mr. Price, of Illinois. To amend the National Science Foundation Act of 1950 to provide scholarships.

H.R. 4225—Mr. Vanik, of Ohio. To provide a scholarship loan program to afford an opportunity to Americans to attain an educational level to which they aspire.

H.R. 4275—Mr. Harris, of Arkansas. Amends Civil Aeronautics Act of 1938 by adding thereto new provisions relating to civil aviation medicine. Defines "Medical Examiner" as any licensed physician who holds the degree of doctor of medicine and who is authorized by the Administrator to perform physical and mental examinations of airmen.

H.R. 4291—Mr. Metcalf, of Montana. To provide for cooperative unit programs of research, education, and demonstration between the Federal Government, colleges and universities, States, and private organizations.

H.R. 4396—Mr. Jackson, of California. Amends Internal Revenue Code to provide partial tax credit for certain payments made to a public or private educational institution of higher education.

H.R. 4403—Mr. McDonnough, of California. To encourage establishment of voluntary pension plans by self-employed individuals.

H.R. 4419—Mr. Rodino, of New Jersey. Allows income tax deduction of certain expenses of taxpayer for education of a dependent.

H.R. 4439—Mr. Thompson, of New Jersey. To establish a program of financial aid to students in higher education.

H.R. 4490—Mr. Addonizio, of New Jersey. To provide loans to enable needy and scholastically qualified students to continue post-high-school education.

H.R. 4594—Mr. Rhodes, of Pennsylvania. Provides 30 per cent credit against individual income tax for amounts paid as tuition or fees to certain public and private institutions of higher education.

H.R. 4597—Mr. Roosevelt, of California. Similar to H.R. 4594.

H.R. 4598—Mr. Roosevelt, of California. To establish a program of scholarship aid and long-term loans to students in higher education and to provide facilities assistance to institutions of higher education.

H.R. 4639—Mr. Bow, of Ohio. To provide additional funds for education in the several States without Federal direction, control, or interference.

H.R. 4644—Mr. Chipperfield, of Illinois. Requests President to mobilize world conference on cancer.

H.R. 4662—Mr. King, of California. Allows deduction from gross income for certain amounts paid by a teacher for his further education.

H.R. 4700—Mr. Shelley, of California. Federal Employees' Health Insurance Act.

H.R. 4752—Mr. Burns, of Hawaii. Amends Social Security Act to further assist States in extending aid for medical care to persons eligible for public assistance.

H.R. 4765—Mr. Dingell, of Michigan. Amends Social Security Act to provide insurance against cost of hospitalization for insured aged persons and their dependents and survivors, and for insured disabled persons.

H.R. 4799—Mr. McGregor, of Ohio. To provide that OASI coverage for lawyers shall be on a voluntary basis.

H.R. 4824—Mr. Reuss, of Wisconsin. To provide voluntary coverage under OASI for physicians and dentists.

H.R. 4935—Mr. Mason, of Illinois. Similar to H.R. 4752.

H.R. 5030—Mr. Powell, of New York. To provide a system of scholarships for college and graduate level study of scientific subjects.

H.R. 5041—Mr. Rhodes, of Pennsylvania. To prohibit interstate insurance companies from issuing group health, hospitalization, and accident insurance which may be cancelled after a period of 18 months for any reason other than nonpayment of premium.

H.R. 5049—Mr. Gray, of Illinois. Similar to H.R. 4752.

H.J. Res. 76—Mr. Poff, of Virginia. To authorize transfer of a percentage of tax collections from individual and corporate income taxes to the States and Territories for use for educational purposes only.

H.J. Res. 151—Mr. Utt, of California. Would transfer Bureau of Narcotics from Treasury Department to the Department of Justice.

H. Res. 61—Mr. Yates, of Illinois. Would create Select

Committee on Problems of the Aging to be composed of seven members of the House.

S. 596—Mr. Capehart, of Indiana. To provide for the establishment of a U.S. Armed Forces Medical Academy.

S. 714—Mr. Neuberger, of Oregon, and others. To extend GI education rights until such time as existing laws authorizing compulsory military service cease to be effective, and to provide for payment of tuition and fees of veterans receiving educational benefits.

S. 831—Mr. Dirksen, of Illinois. To encourage the establishment of voluntary pension plans by individuals. Provides for withdrawal from restricted retirement funds by totally and permanently disabled contributors upon affidavit only of a licensed doctor of medicine.

S. 844—Mr. Murray, of Montana. National Health Insurance Act.

S. 867—Mr. Humphrey, of Minnesota. To provide for assistance to and cooperation with States in strengthening and improving State and local programs for the diminution, control, and treatment of juvenile delinquency.

S. 868—Mr. Humphrey, of Minnesota. To provide a 30 per cent credit against the Federal income tax for amounts paid as tuition or fees to certain public and private institutions of higher education.

S. 869—Mr. Humphrey, of Minnesota. To establish a program of scholarship aid and long-term loans to students in higher education and to provide facilities assistance to institutions of higher education.

S. 872—Mr. Humphrey, of Minnesota. Youth Opportunity Act. Essentially a consolidation of S. 867, S. 868, S. 869.

S. 968—Mr. Magnuson, of Washington. Authorizes appointment of doctors of chiropractic in the Department of Medicine and Surgery of the Veterans Administration.

S. 968 (Amendment in the nature of a substitute)—Mr. Magnuson, of Washington. In addition to authorization for appointment of doctors of chiropractic in VA, provides that whenever any person is entitled by law or regulation to receive medical care by or through the Veterans Administration he shall, if he so elects, have the right to receive chiropractic care and the Chief Medical Director shall make available the services of qualified chiropractors.

S. 980—Mr. Kefauver, of Tennessee, and others. Authorizes the Surgeon General of Public Health Service to establish an after-care post-hospital treatment program for drug addiction.

S. 981—Mr. Kefauver, of Tennessee, and others. Creates an Advisory Committee on Drug Addiction in the Department of Health, Education, and Welfare.

S. 982—Mr. Kefauver, of Tennessee, and others. To establish a hospital of the Public Health Service in one of the Pacific Coast States especially equipped for the treatment of persons addicted to the use of habit-forming drugs.

S. 1021—Mr. Pastore, of Rhode Island. Authorizes award of certain scholarships by National Science Foundation.

S. 1045—Mr. Magnuson, of Washington. To amend the Civil Aeronautics Act of 1938 by adding thereto new provisions relating to civil aviation medicine. Defines "Medical Examiner" as any licensed physician who holds the degree of doctor of medicine and who is authorized by the Administrator to perform physical and mental examinations of airmen.

S. 1095—Mr. Case, of South Dakota. To provide GI education benefits to persons who perform active service in the Armed Forces after January 31, 1955, while compulsory military service is required under existing laws of the United States.

S. 1117—Mr. Magnuson, of Washington. Establishes a Bureau of Older Persons within the Department of Health, Education, and Welfare.

S. 1129—Mr. Young, of North Dakota. Increases education and training allowances under the Veterans' Readjustment Assistance Act of 1952.

S. 1137—Mr. Morse, of Oregon, for himself, Mr. Neuberger, of Oregon, and Mr. Long, of Louisiana. Amends Social Security Act to eliminate the requirement that an individual attain 50 years of age in order to be eligible for disability benefits.

S. 1157—Mr. Neely, of West Virginia. Requests President to mobilize conference of world's outstanding cancer experts.

S. 1158—Mr. Kuchel, of California. To extend GI education benefits until such time as existing laws authorizing compulsory military service cease to be effective.

S.J. Res. 17—Mr. Thye, of Minnesota. Establishes a Joint Committee on Scientific Research.

S.J. Res. 30—Mr. Ives, of New York. Establishes in the Department of Defense a United States Academy of Nursing.

S.J. Res. 48—Mr. Magnuson, of Washington. Authorizes the Commissioner of Education to make loans to individuals who desire training as teachers, or who wish to undertake a course of scientific, engineering, or medical study.

Current Literature

Palliation of mammary carcinoma with phosphoramide drugs

▶ IN THE OCTOBER 20, 1956, issue of *The Journal of the American Medical Association*, Jeanne C. Bateman, M.D., and Harry N. Carlton, M.D., describe the use of N,N,'N"-triethylenethiophosphoramide and/or N-(3-oxapentamethylene)-N', N"-diethylenephosphoramide in 122 cases of far-advanced mammary carcinoma. The disease was considered out of control at the start of therapy in all but 5 of the patients. Except for short initial, interval, or terminal hospitalization, all were treated on an ambulatory basis. The drug was given into a tumor site when possible, but oral therapy was used sometimes, as when maintenance therapy was necessary or when injections were intolerable to the patient.

The total doses of triethylenethiophosphoramide ranged from 15 to 1,145 mg., and therapy lasted from 1 to 103 weeks. The average total dose was 336 mg., and average duration of therapy was 22 weeks. From 5 to 430 mg. of oxapentamethylene was given for periods ranging from 1 to 37 weeks, with an average total dose of 139 mg., and average duration of therapy of 7 weeks. Some subjective improvement was noted in all patients. Eighty-one patients showed some objective improvement for periods ranging from 1 to 21 months, and 41 (34 per cent) of patients showed no objective improvement. Healing of ulceration and partial to complete regression of primary tumors and metastatic nodules and nodes were observed in two thirds of patients who had such lesions. Other responses included control of serous cavity effusions, recalcification of bone lesions, and control of signs and symptoms of central nervous system metastases.

Hematopoietic depression was the one serious side-effect of phosphoramide therapy, and cortisone was found to aid significantly in protecting against this. Because the hematologic response to triethylenethiophosphoramide was more predictable, most patients originally started on oxapentamethylene were changed to the former drug. The authors conclude that the phosphoramides are useful in the palliation of mammary carcinoma and that triethylenephosphoramide is preferable to oxapentamethylene.

Fatal vaccinia associated with cortisone therapy

▶ ALTHOUGH DISSEMINATION OF bacterial infection by cortisone therapy is known and can be controlled by appropriate antibiotics, virus dissemination during cortisone therapy is less well known and no completely satisfactory virucidal agent exists for its management. In the October 27, 1956, issue of *The Journal of the American Medical Association,* Sidney Olansky, M.D., J. Graham Smith, Jr., M.D., and Oscar C. E. Hansen-Pruss, M.D., report a fatal case of generalized vaccinia in a patient with chronic lymphocytic leukemia who had received cortisone and triethylene melamine intermittently for 3 years. A course of smallpox vaccination was started 49 days before her death because of herpes simplex on the lower lip. Local treatment, variations in cortisone dosage, diphenhydramine (Benadryl) hydrochloride, and antibiotics failed to halt the progress of extensive vaccinia lesions. Gamma globulin and whole blood transfusions were also tried to no avail. The patient died 3 weeks after the reaction to vaccination became severe. The authors feel that the most important factor in the patient's inability to mobilize antibodies to vaccinia was the suppressive effect of cortisone, since the leukemia was well controlled and since gamma globulin did not affect the vaccinia infection. They conclude that the introduction of live virus into patients receiving cortisone may be unwise and that additional studies on this subject are indicated.

Nalline: An aid in detecting narcotic users

▶ WRITING IN THE NOVEMBER 1956 issue of *California Medicine,* James G. Terry, M.D., and Fred L. Braumoeller, A.B., describe the use of Nalline (N-allylnormorphine) as final proof of suspected narcotic addiction. Although it is a narcotic, Nalline has little or no analgesic effect and apparently acts on the central nervous system to abolish certain effects of narcotics. The physician is advised to obtain permission from the patient to give the test. This should be in the form of an authorization and waiver and should be signed before two witnesses.

Management of nephrosis

▶ IN THE SEPTEMBER 1956 issue of *California Medicine,* Carolyn F. Piel, M.D., evaluates the course of nephrosis in 36 children, 12 of whom received hormone therapy over extended periods.

Before the advent of chemotherapy, approximately 50 per cent of patients with nephrosis died of infectious processes, particularly peritonitis. Management of nephrosis has been directed toward elimination of edema because spontaneous recovery is preceded by diuresis and because it makes the patient more comfortable. Various means have been used, among them administration of a number of hormones, desiccated thyroid, and particularly adrenal steroids. Generally, short-term courses of cortisone, hydrocortisone, or corticotropin given either intramuscularly or intravenously cause diuresis in about 80 per cent of patients. Because there is almost invariably a relapse after the initial treatment, repeated courses—as many as ten being given to a single patient—are instituted until favorable results are achieved.

Observations made during the course of diuresis brought about by adrenal hormones indicated that profound physiologic changes were taking place in addition to loss of excess salt and water. Changes included: (1) improvement in renal function —increase in glomerular filtration rate and decrease in clearance of albumin; (2) metabolic alterations—decrease in urinary excretion of aldosterone, increase in serum proteins with improvement in electrophoretic pattern, and decrease in circulating antidiuretic hormone; and (3) influence on basic lesion—return of serum complement to normal levels.

An analysis of the hospital records of 533 patients with nephrosis revealed the following facts: There is no difference in the mortality rates of patients receiving no therapy and of those patients receiving steroids for edema only. There is, however, a pronounced decrease in mortality in patients treated with steroids by schedule. This suggests that giving steroids by schedule prolongs life in childhood nephrosis.

In a series of 36 children with nephrosis seen by the author, 12 of 24 who received no treatment or short-term courses of steroids died, and 1 was lost to follow-up. The remaining 11 had been well 6 months to 5 years at the time of the report. The other 12 children received steroids by schedule over extended periods. One of these died in renal failure following a 2-year illness. Prior to death the child had received continuous therapy for 2 months without response. The remaining 11 children had been free of signs and symptoms of nephrosis for 4 to 18 months at the time of the report. In only 2 instances had therapy been discontinued.

From the observation of this small group of patients and from a review of similar cases in the literature, it seems apparent that with intensive steroid therapy nephrotic children are maintained in better health, that the edema which makes them so susceptible to infections is controlled, and that possibly mortality is lowered.

Despite the advantages of steroid therapy, dangers are ever present. Complications of steroid therapy may include renal failure, derangement of serum electrolytes, infection, and thrombosis. Treatment with steroids must be individualized for each nephrotic patient, therefore, and the patient diligently watched.

Surgical treatment of bunions

▶ W. R. GRANNIS, M.D., A. W. Meier, M.D., and J. B. Tanner, M.D., writing in the October 1956 issue of *California Medicine,* report gratifying results in 43 operations (25 patients) for the correction of metatarsus primus varus, bunion, and hallux valgus.

The technic originated by Hawkins, Mitchell, and Hedrick was followed closely. Postoperatively, padded tongue-blade splints were used to support the operative site until healing of the osteotomy was secure, usually a period of 6 weeks. Ambulation with the splints in place was possible by the third or fourth postoperative day. Dressings were changed about every 10 days. An incidental observation was that clawing and lateral deviation of the small toes diminished progressively following correction of hallux valgus.

Selection of patients for operation was based upon the following criteria: If the angle between the first and second rays of the foot is 9 degrees or more, progressive deformity and degenerative change at the first metatarsophalangeal joint is considered inevitable and operation is indicated. Since the procedure spares the joint, it is essential that the articular surfaces of the joint be fairly well preserved. Operation may be used prophylactically before the appearance of significant symptoms in the case of a young patient with severe deformity, because symptoms will certainly appear otherwise.

Complications in the present series were minor.

Lengths of the growing foot

▶ IN THE OCTOBER 1956 issue of *The Journal of Bone and Joint Surgery,* Marie M. Blais, A.B., William T. Green, M.D., and Margaret Anderson, M.S. in P.H., report on a study of serial measurements of the normal feet of 227 girls and 285 boys with poliomyelitis conditions in the contralateral foot. This information on the pattern of growth of the foot is of special value to the orthopedic surgeon who may be required to undertake surgery that would affect the ultimate length of a child's foot.

The ages of the children involved in this study ranged from 1 through 18 years. Measurements of normal foot length were made with a simple wooden caliper and represented the length of the foot from the back of the heel to the tip of the great toe with the subject in a standing position. The distributions evolved from these data provide a standard for comparison of the growth of the individual foot at all ages through 18 years.

This study shows that through 12 years of age the length of the feet of girls and boys is about the same. After 12, a boy's foot will continue to grow for 4 more years whereas a girl's foot will grow for only 2 more years and at a much slower rate. (The average adult length of a man's foot is 2.2 cm. greater than that of a woman's.)

From infancy through 5 years of age, the feet of both girls and boys grow at a sharply decreasing rate. Thereafter there is an average annual increase in length of 0.9 cm. from 5 through 12 years of age in girls and 5 through 14 years in boys. "Spurts" of growth during this period are not uncommon, especially near the end of this 12- and 14-year age period. After the age of 12 (girls) and 14 (boys), the foot grows at a markedly decreased rate. Mature length is reached, on the average, at 14 years in girls and 16 in boys.

Throughout the growing period, the foot is relatively closer to its adult size than is the total height or the length of the femur and tibia of the same individual. On the average, half the mature dimension of the foot is reached at 1 year of age in girls and 18 months in boys, whereas half the mature length of the femur and tibia is not reached until the ages of 3 years in girls and 4 in boys. Of course, a consideration of the relative maturity of the person is vital in evaluating the growth of the foot, just as it is in predicting the residual growth in other parts of the body. Accelerated maturity usually coincides with an earlier completion of growth of the feet and retarded maturity with a longer period of growth.

First aid in eye injuries

▶ MANY EYE INJURIES are first seen by the general practitioner. In the November 1956 issue of *The Medical Clinics of North America,* John S. McGavic, M.D., tells how to examine the patient, suggests first aid measures, and describes which cases should be referred to an ophthalmologist.

If the general practitioner doubts his ability or lacks the proper equipment and supplies, or is in doubt as to the extent of injury to the eye, he should refer all patients directly to an ophthalmologist. Most eye injuries, however, require first aid before they can be seen by the specialist. These include the use of a local anesthetic, the instillation of fluorescein, the application of a sterile eye pad, and irrigation of an eye injured by chemicals. Many general practitioners are not prepared to do more than this.

The physician who recognizes his own limitations and who has the necessary equipment may undertake with propriety such procedures as the removal of foreign bodies from under the upper lid or from the cornea, the treatment of abrasions and shallow lacerations of the cornea, and repair of lacerations of the lid involving only the skin. Cases involving lacerations of the sclera and cornea, particularly if penetrating in nature; intraocular foreign bodies; chemical burns; lacerations involving the lid margin, the canaliculus or the tarsal plate; and severe contusions of the globe should all be referred to an ophthalmologist. Follow-up care of some of these more serious injuries can and should be handled by the general practitioner in cooperation with the ophthalmologist.

The necessary instruments for the first aid care of eye injuries are few in number and not expensive. They include adequate lighting, a condensing lens to bring light to a focus on the eye, some type of binocular loupe, a local anesthetic agent, and sterile fluorescein. An ophthalmoscope is also useful. Instruments and drugs which are instilled into the eye should be absolutely sterile.

All doctors can render a real service by sponsoring educational programs aimed at preventing accidental injuries due to BB guns, slingshots, arrows, rocks, scissors, knives, fireworks, and so forth.

Great satisfaction can be achieved from the successful care of eye injuries because many of them are painful and very frightening to the patient. Tact and reassurance, along with local anesthesia, can work wonders and make first aid care of the eye pleasurable and successful to the physician.

Role of allergy in nephrosis

▶ IN THE DECEMBER 15, 1956, issue of the *New York State Journal of Medicine,* Vincent J. Fontana, M.D., W. C. Spain, M.D., and Adolph G. DeSanctis, M.D., report a study of 18 children attending the Nephrotic Clinic of New York University Hospital undertaken to determine whether nephrosis should be considered an allergic manifestation. The children were between 20 months and 12 years of age and were in both the edematous and the nonedematous stage of the disease. Twenty children from the general pediatric clinic were used as controls. In 8 (44 per cent) of the 18 nephrotic children, a positive history of clinical allergy was obtained, as compared with 3 (15 per cent) in the control group. In 12 (66 per cent) of the nephrotics, the family history revealed allergy or possible allergy in 1 or more relatives. Eight of the controls showed evidence of familial allergy, 4 (23 per cent) gave questionable evidence of such history, and 2 (11 per cent) gave no positive evidence of any family allergy. Wheezing was noted in 9 (50 per cent) of the nephrotics in the hospital or by parents at home, and in only 2 (10 per cent) of the controls. Wheezing was not considered part of the allergic personal history, but the authors feel that it was probably allergic in origin in the nephrotic children. Eight of the 13 nephrotic children given complete intradermal skin tests to the inhalants and to 37 foods reacted positively. The 5 who did not were in the acute edematous phase of a "nephrotic" episode. Chlor-Trimeton (an antihistamine) given to 5 children in the acute phase resulted in loss of weight or maintenance of weight. The authors feel that an underlying allergic reaction in the kidney, clinically manifest by increased capillary permeability throughout the body, must be considered in view of the significant allergic component found in the nephrotic children.

Management of lingual cancer

▶ THE TONGUE IS THE MOST frequently involved site of cancer arising in the oral cavity. Malignant tumors of the tongue cause more deaths each year than any other head and neck cancer, including thyroid neoplasms. In the November 1956 issue of *Surgery, Gynecology and Obstetrics,* Frank E. Berridge, Jr., M.D., and Arthur G. James, M.D., describe management of lingual cancer on the basis of experience with 102 consecutive cases of primary lingual cancer in which 136 separate operative procedures were performed.

Once cancer of the tongue is detected, a biopsy is made at the periphery of the ulcer or tumefaction, and if neck nodes are palpable an aspiration biopsy of the most suspicious mass is made. The authors feel that lingual cancer is primarily a surgical problem. Small localized carcinomas of the anterior third of the tongue are extirpated by transecting the apex of the tongue obliquely. Preferably 2 cm. of normal tissue is removed on all sides of the lesion. Lesions up to 3 cm. in diameter on the lateral border of the middle third of the tongue are remediable by hemiglossectomy. The hypoglossal nerve should be preserved if possible to avoid a unilateral flaccid tongue. Tumors of the dorsum of the tongue are elliptically excised. Care must be exercised to avoid interruption of the hypoglossal nerve bilaterally. Well-lateralized lesions without cervical spread are removed through an intraoral approach in the same way as the middle third lateral tumors. More extensive lesions of the base of the tongue are approached laterally. If necessary the entire base of the tongue is resected and the middle third of the tongue sutured to the base of the epiglottis. This procedure is always combined with radical neck dissection.

The authors prefer to await gross evidence of metastatic

spread to the cervical nodes before doing a radical neck dissection. The most commonly involved nodes are in the deep cervical chain, especially at the carotid artery bifurcation. The sternocleidomastoid and omohyoid muscles, internal jugular vein, and the salivary gland are removed in block with the accompanying lymphatic channels from the level of the clavicle to the mandible. The dissection may be extended, and only the internal and common carotid arteries are considered vital structures because of the high, unpredictable mortality associated with their interruption.

An en bloc procedure is used when unilateral cervical node metastasis occurs with an untreated or uncontrolled primary tongue lesion. A standard radical neck dissection is extended cephalad through the floor of the mouth (or lateral pharyngeal wall) beneath the involved mandible and accomplishing a generous partial glossectomy. Whenever a posterior lesion invades the faucial pillar or an anterior lesion involves the gingiva, hemimandibulectomy is indicated. A "commando" procedure is used for primary lesions (with or without cervical metastases) that have extended laterally to involve the gingiva, mandible, or its periosteal covering. This procedure has become accepted because of the inability of external radiation to deliver cancerocidal doses to the mandible. A radical neck dissection is done in block with the hemimandibulectomy and subtotal glossectomy when possible. A temporary tracheostomy is performed routinely after a commando procedure or radical neck dissection combined with pharyngotomy.

When radiation therapy is indicated because of massive involvement of the tongue or for other reasons, interstitial implantation of radioactive iridium has been found most satisfactory. A tumor dose of 6,000 roentgens is delivered by the interstitial implant technic when possible.

On the basis of their clinical material, the authors conclude that possibly oral hygiene and smoking, rather than syphilis, are playing a more decisive role in predisposition to cancer of the tongue.

BOOK REVIEWS

▶ *Books for review which were received during the period from January 5 to February 5 are listed on advertising pages 128 and 129. Reviews of these books will be published as space permits.*

▶ FLUID BALANCE HANDBOOK FOR PRACTITIONERS. By William D. Snively, Jr., M.D., Member, American Academy of General Practice; Attending Physician, Evansville Child Health Clinics; Staff Member, St. Mary's Hospital; Medical Department, Mead Johnson & Company; and Michael J. Sweeney, M.D., Member, American Academy of Pediatrics; Attending Physician, Evansville Child Health Clinics; Staff Member, St. Mary's Hospital; Medical Department, Mead Johnson & Company. Cloth. Pp. 326, with illustrations. Price $6.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

Daily practice points to the need for a working knowledge of the physiologic aspects of body fluids, their balances and imbalances, and measures for treatment of disorders arising from or resulting in their disharmony. Many articles and books have been written concerning the intricacies of this vital subject. However, too many have been so weighted down with complicated formulae, equations, and mathematical theory that the average physician stands in awe. He respects the array, but he does not understand it.

In their book, "Fluid Balance Handbook for Practitioners," Snively and Sweeney have made an attempt to lead the practicing physician out of the maze of abstract data, so that instead of being awed by them, he will understand them. The authors have had years of experience in teaching both the theory and application of the fundamentals of fluid balance, not only to medical students and practicing physicians but also to lay technical personnel and nurses. Because of this experience, they bring to their subject an ability to explain simply and clearly a highly complex subject.

This work is truly a "handbook" which serves as a working clinical manual. The first section, titled "Foundation Facts," supplies the information basic to an understanding of the subject. It is in this phase that a majority of writers become involved with the complex equations which prove to be such a formidable barrier to most physicians. In this book, however, through the use of simple line diagrams blocked in color, the basic facts concerning fluid balance are made clear.

As an example of the authors' method, the explanation of the term "milliequivalent" (mEq.) is as follows: For many years, electrolytes were measured in milligrams, which was unsatisfactory, since the milligram is a measurement of weight rather than of chemical combining power. To illustrate that the important fact is combining power, not weight, the authors compare a C. & E. I. Road Diesel engine, weighing 230,000 pounds but only delivering 1,500 horsepower, to an Eastern Airlines Martin 404, weighing only 45,000 pounds but capable of developing 4,800 horsepower. Just as horsepower and not weight expresses the power of transportation, so does the chemical combining power (milliequivalent) and not weight (milligram) become the measure of importance in the study of electrolytes. With such simplicity and clarity, the reader is led to understand the basis for clinical diagnosis and therapeutics in cases involving proper fluid balance.

Part two of the book concerns clinical diagnosis. As a clarifying step, a modification of Moyer's classification is adopted, placing the clinical disorders in three basic categories. Fluid imbalances may involve changes in (1) properties of extracellular fluid, (2) location of extracellular fluid, and (3) body nutritional status. Each area is discussed simply, but completely and practically.

Parts three, four, and five deal with therapy as it applies to the above changes, and part six discusses the various routes for fluid administration.

One of the most interesting sections of the book is part seven, with its several detailed case histories and solutions to their problems. Along with this is a series of "workshop" cases, where the reader may compare his analysis to that of the authors.

As an appendix, there is a list of available intravenous solutions for fluid balance therapy, a bibliography for those desiring to study the subject in more detail, and an excellent index.

For those who demand a complete discussion of everything that has been written concerning fluid balance, this book will not be sufficient; it is not an encyclopedia. It is, however, a book which contains both a clear explanation and a useful clinical approach to the subject. It serves as a guide to general practitioner and specialist alike, providing the answer to many serious clinical problems, and can also be recommended as a textbook for the student.

Without question, this is one of the best books on the subject ever read by this reviewer. It has another contribution to make: It represents a pioneer effort in a new and long-needed type of medical writing, adopting a philosophy of "if you can't understand it, don't say it!" Medicine may be grateful to Snively and Sweeney, if they persuade other medical writers through this book that simplicity, rather than detailed confusion, is a sign of brilliant medical writing.

The care which the publisher has taken in making the book physically attractive adds materially to the publication. He is to be complimented for making it possible for the authors to pioneer this more understandable form of medical writing. The illustrations by Kathleen Calhoun are excellent.

This book can be recommended to all whose purpose is to serve better the health needs of people seeking their consultation.

GEORGE W. NORTHUP, D.O.

▶ COUNSELING PSYCHOLOGY. By Milton E. Hahn, Dean of Students and Professor of Psychology, University of California, Los Angeles; and Malcolm S. MacLean, Professor of Higher Education, University of California, Los Angeles. Ed. 2. Cloth. Pp. 302. $4.50. McGraw-Hill Book Company, 330, W. 42nd St., New York 36, 1955.

The limitations or definition of the area of counseling psychology is rather vague in the minds of most people, even of some physicians. The authors of this book settle this matter, for they treat the subject quite completely in a concise and clear manner.

In the first chapter, which deals with the history and scope of this field, the authors give this definition:

Clinical or psychological counseling is a process which takes place in a one-to-one relationship between an individual troubled by problems with which he cannot cope alone and a professional worker whose training and experience have qualified him to help others reach solutions to various types of personal difficulties. . . . His major mission is to organize learning situations in such a manner that his client will, after gaining new perceptions and insight into his problems, change his behavior from what it was to something more personally satisfying and socially acceptable.

They further crystalize this definition by specifying as unique to the counselor the following:

. . . (1) his status as a practicing psychologist, (2) his concern with clients in the "normal" range, (3) his theoretical orientation to, and emphasis upon, trait and factor and self-realization by pothesis, (4) his general adherence to the concept of anxiety reduction as an aspect of learning.

The qualifications of a counseling psychologist, the training course, approved centers, and the selection of candidates for training are given in detail.

The book proceeds with the subject through 302 pages and 13 chapters. The second chapter deals with the philosophy and ethics of counseling psychology, which brings out still more clearly the area of operation. The next chapter covers the nature of educational, vocational, and personal problems and immediately following are two chapters on the tools and technic the psychologist uses. Then follow three chapters on aptitude, abilities, skills, achievements, and interests. A chapter on the collection of data for a systematic case study, which is well worth the time of any physician, is included, as are two chapters dealing with interview procedures. The final two chapters cover prognosis and prediction and the relationship of counseling psychologists to other allied professions.

This work, which has been carefully compiled and is complete in its detail, is an excellent treatise on this subject. Certainly anyone with any question about this field would profit by reading it. The technics for counselors are good, and many of them could be adapted to the work of the physician.

THOMAS J. MEYERS, Ph.D., D.O., F.A.C.N.

▶ THE STRUCTURE AND FUNCTION OF SKIN. By William Montagna, Brown University, Providence, Rhode Island. Price $8.80. Cloth. Pp. 356, with illustrations. Academic Press, Inc., 125 East 23 Street, New York 10, 1956.

This 356-page book is an excellent treatise on detailed anatomy of the skin. The author states that one cannot study structure without studying function; then, in support of his belief, he admirably coordinates the two throughout the book. The coverage is so complete in this book, which was written primarily as a source of reference, that it can serve the biochemist interested in skin.

Because of the character of the work, much of the study is based on the reactions of animal skin, for example, reactions to radiation, the effect of hypophysectomy, the removal of other endocrines, and food restrictions.

An excellent feature of the book is its many clear pictures, some in color, that include electron microscope pictures and such practical things as the approximating side of skin from several parts of the body.

The chapter discussing factors that influence hair growth should be of particular interest to all dermatologists.

The book is recommended for hospital and college libraries, dermatologists, physiologists, pathologists, and others who are interested in skin structure and function.

A. P. ULBRICH, D.O.
D. KOPRINCE, D.O.

▶ TECHNIQUES AND PROCEDURES OF ANESTHESIA. By John Adriani, M.D., Director, Department of Anesthesiology, Charity Hospital; Professor of Surgery, School of Medicine, Tulane University of Louisiana; and Clinical Professor of Surgery and Pharmacology, School of Medicine, Louisiana State University, New Orleans, Louisiana. Ed. 2. Cloth. Pp. 568, with illustrations. Price $8.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

Six printings since 1947, and now a completely revised edition, speak well for the acceptance of this book and for the willingness of its author to spend time and effort in keeping stride with the latest in anesthetic drugs and technics.

Fields of information include: General Considerations, Inhalation Anesthesia, Complications of Anesthesia, Basal Narcosis and Analgesia by Intravascular Injection, Rectal Anesthesia, Regional Anesthesia, Specialized Procedures, Resuscitation, and Inhalation Therapy. The section on Specialized Procedures is completely new—including Pediatric Anesthesia, Geriatric Anesthesia, Thoracic Surgery, Obstetric Analgesia and Anesthesia, Hypothermia during Anesthesia, Hypotensive Anesthesia, and Tracheobronchial Aspiration with Catheter. Other parts of the book are revised and enlarged to embrace 1956 findings and practices.

"The technique of anesthesia cannot be learned from books," says the author. So, although the book contains information for the beginner as well as the experienced anesthetist, its purpose is to serve as an academic outline to expedite learning and to guide and supplement practical experience. The demand it has had until now indicates how well this aim has been reached, and it should gain even wider use as it moves upward in quality another step.

▶ MOSBY'S REVIEW OF PRACTICAL NURSING. Cloth. Pp. 322, with illustrations. Price $4.25. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1956.

This book of outlined information has been prepared to help the practical nursing student organize class discussion material or as a review for tests. It serves as a reference, as a help in preparing for licensing examinations, and in keeping the practical nurse abreast of new material.

Different sections of the book include: orientation to the field, body structure and function, basic nursing care, home care, nursing the adult patient, nursing the aged, nursing the child, communicable diseases, nursing the physically handicapped, nursing the mother and infant, nursing the mentally ill, and vocational aspects. There are examinations which may be used for self-help, or as a part of a workbook in a course. The appendix gives handy information on vocabulary, abbreviations, and weights and measures; and there are printed forms and instructions for experience records.

This book is by no means self-sufficient, but it does act as a systematic guide to the learning of practical nursing.

▶ COLLAGEN DISEASES Including Systemic Lupus Erythematosus, Polyarteritis, Dermatomyositis, Systemic Scleroderma, Thrombotic Thrombocytopenic Purpura. By John H. Talbott, M.D., Professor of Medicine, The University of Buffalo School of Medicine; Physician-in-Chief, Buffalo General Hospital, Buffalo, New York; and R. Moleres Ferrandis, M.D., Training Fellow in Arthritis of the Western New York Chapter of the Arthritis and Rheumatism Foundation. Cloth. Pp. 232, with illustrations. Price $6.50. Grune & Stratton, 381 Fourth Ave., New York 16, 1956.

The authors have pioneered the field in compiling a monograph which deals concisely with five of the less common collagen diseases. The particular diseases considered are: systemic lupus erythematosus, polyarteritis, dermatomyositis, systemic scleroderma, and thrombotic thrombocytopenic purpura.

In spite of the extensive literature listed in the bibliogra-

phy, and the reference in the preface to "more than five times" this much which the authors perused, the diseases are still relatively unknown and largely unrecognized. So far, no one has discovered either etiologies or curative treatments for them, so that there remains a field wide open for research. The volume contains a good condensation of a vast body of information, making it a usable reference. Changes in terminology and redefinitions have been carefully thought through. Suggestions for supportive treatment are given when practical, along with results of measures employed by other clinicians, with evaluations for benefit.

Listed for each disorder are: historical notes, discussions of incidence, relation to other collagen disorders, etiology and pathogenesis, pathology, clinical and laboratory findings, diagnosis, the clinical course, and treatment.

▶ CHANGING CONCEPTS OF PSYCHOANALYTIC MEDICINE. Proceedings of the Decennial Celebration of the Columbia University Psychoanalytic Clinic, March 19 and 20, 1955. Edited by Sandor Rado, M.D., D.Pol.Sc., Clinical Professor of Psychiatry; Director, Psychoanalytic Clinic for Training and Research, College of Physicians and Surgeons, Columbia University, New York, N.Y.; and George E. Daniels, M.D., Clinical Professor of Psychiatry; Associate Director, Psychoanalytic Clinic for Training and Research, College of Physicians and Surgeons, Columbia University, New York, N.Y. Cloth. Pp. 248, with illustrations. Price $6.75. Grune & Stratton, 381 Fourth Ave., New York 16, 1956.

Ten years ago the Columbia University Psychoanalytic Clinic began a new trend in psychoanalytic training—a 3-year, full-time course that included training in the other branches and basic sciences of psychiatry and was complemented by the availability of full hospital facilities. This book is based on papers presented at the Clinic's tenth anniversary. After an introductory history of the clinic, the papers are in groups dealing with basic theory, therapy, work with children, clinical papers, and research in schizophrenia. There are discussions of comprehensive medicine, types of people who seek psychoanalytic help, the pathology of family relationships, and patterns of the sexual offender. The book is compact, tightly written, and well indexed. It contains excellent material for the psychoanalyst or the general physician concerned with psychoanalytic concepts and their relation to the practice of medicine.

▶ CLINICAL MANAGEMENT OF RENAL FAILURE. By Maurice B. Strauss, M.D., Professor of Clinical Medicine, Boston University School of Medicine; Lecturer in Medicine, Tufts University School of Medicine; Lecturer on Medicine, Harvard Medical School; Chief, Medical Service, Boston Veterans Administration Hospital, Boston, Massachusets; and Lawrence G. Raisz, M.D., Instructor in Medicine, Boston University School of Medicine; Physician, Medical Service, Boston Veterans Administration Hospital, Boston, Massachusetts. Paper. Pp. 114. Price $2.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

The authors have set two goals for this volume: To give the practicing physician and student a foundation for understanding the pathologic physiology of renal failure and its consequences and treatment and to initiate critical evaluation of the methods used to remove materials from the body. The greater part of the book is devoted to treatment of acute renal failure, with special notice of dialytic methods. The doctors present and comment on measures for correcting metabolic derangements of the chronic conditions, but admit that amelioration of the patient's distress is the best that can be expected.

▶ THE PERSON BEHIND THE DISEASE. By Julius Bauer, M.D., F.A.C.P., Clinical Professor of Medicine, College of Medical Evangelists, Los Angeles; Senior Attending Physician, Los Angeles County General Hospital; Consultant in Medicine, Long Beach Veterans Administration Hospital. Cloth. Pp. 136. Price $3.50. Grune & Stratton, 381 Fourth Avenue, New York 16, 1956.

The increased emphasis on psychosomatic medicine in the past several years has brought the author to consider the problems of illness from an even more generalized, holistic view. The individual who suffers a disease is more than a mechanism with an injured organ; he is an injured mechanism. This is based on the concept that the whole individual is more than the sum of his parts. Therefore, it becomes imperative to understand not only the physiologic mechanisms as separate entities within the body (that is, digestive system, circulatory system, nervous system, et cetera) but their interrelations, which make up a whole being.

The author takes a strong position on the side of genetics, feeling that extrinsic factors are somewhat overemphasized. He feels that a person's uniqueness is based at least equally on hereditary factors with which he is endowed. He states:

> . . . the genes, as the main carriers of individual constitutional characteristics, form an inseparable unit in the fertilized ovum, but they remain a unit also in the mature person, though lodged and acting in all his different parts, organs and tissues.

From this concept, he elaborates on the holistic view of medicine from several aspects, both physiologic and psychologic. The result is more a philosophy of medicine than a handbook which will help in diagnosis and cure, but this is surely the author's intention. Within those limits the book achieves worth.

▶ A Manual of FRACTURES AND DISLOCATIONS. By Barbara Bartlett Stimson, A.B., M.D., Med. Sc.D., F.A.C.S., Director of Department of Bone and Joint Surgery, St. Francis Hospital, Poughkeepsie, New York; Chairman of Trauma Committee, Vassar Brothers Hospital, Poughkeepsie, New York; Consultant in Orthopedics, Hudson River State Hospital, Poughkeepsie, New York; Sharon Hospital, Sharon, Connecticut; Northern Dutchess Health Center, Rhinebeck, New York; Formerly Assistant Professor of Surgery, Columbia Presbyterian Medical Center, and Attending Surgeon on the Fracture Service at Presbyterian Hospital. Ed. 3. Cloth. Pp. 224, with illustrations. Price $4.50. Lea & Febiger, Washington Square, Philadelphia 6, 1956.

Limiting her discussion of fractures and dislocatiotns to the long bones of the arms and legs; the joints of the arms, legs, and feet; and the bones and joints of the chest, spine, and pelvic girdle, the author has prepared a third edition of her popular small textbook for students, interns, and general practitioners in the light of new experience gained from 8 years' experience away from a large teaching medical center. The stress is on the common injuries which the general practitioner is so often called upon to treat, rather than on the care of the more complex injuries, for which a specialist's attention is mandatory. Fractures of the face and skull, for example, are not touched upon.

The new edition contains many new line drawings, illustrating the fractures and dislocations as well as the methods applied in the treatment of those conditions. The volume is a handy guide to established methods of providing emergency care in cases of injury. An entire chapter is devoted to principles of treatment, applied in an emergency ward.

The author has a rich background as a teacher of surgery at Columbia Presbyterian Medical Center, New York, combined with her more recent experience as the director of the department of bone and joint surgery at St. Francis Hospital, Poughkeepsie, New York. Her book is a clearly presented, concise, and highly useful guide to the diagnosis and treatment of the more common fractures and dislocations, and will be welcomed by those who from time to time are called upon to handle, transport, examine, and treat patients whose bones have been injured.

POSTURAL BACK PAIN. By Milton C. Cobey, M.D., F.A.C.S., Professor of Orthopedic Surgery, Georgetown University Medical School, Washington, D. C. Paper. Pp. 78, with illustrations. Price $3.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

Innerspring mattresses take a gentle beating, as do women's high heels and reclining office chairs, in this small book on posture. Much more is said about postural health than about curing back pain, though exercises and instructions for improving posture are suggested. There are some methods given for determining origin of the pain, and something of postural disease syndromes. Quite a section is devoted to the development of posture, both from anatomic and child-care standpoints. There are a glossary, a bibliography, and a subject index, all in proportion to the size of the book itself. One might suggest that coverage of the subject is not quite adequate, though in many instances the book might serve as a compact reference.

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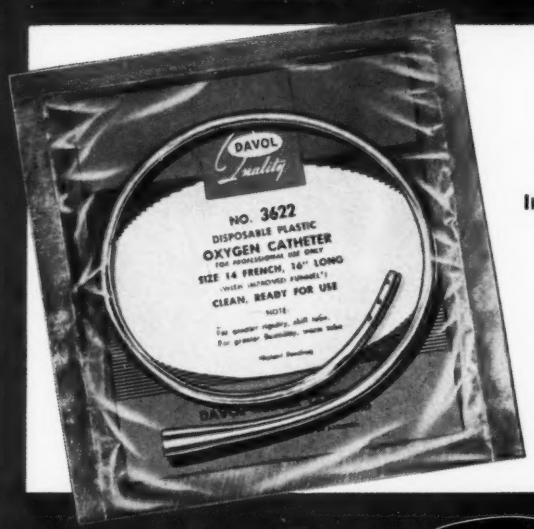

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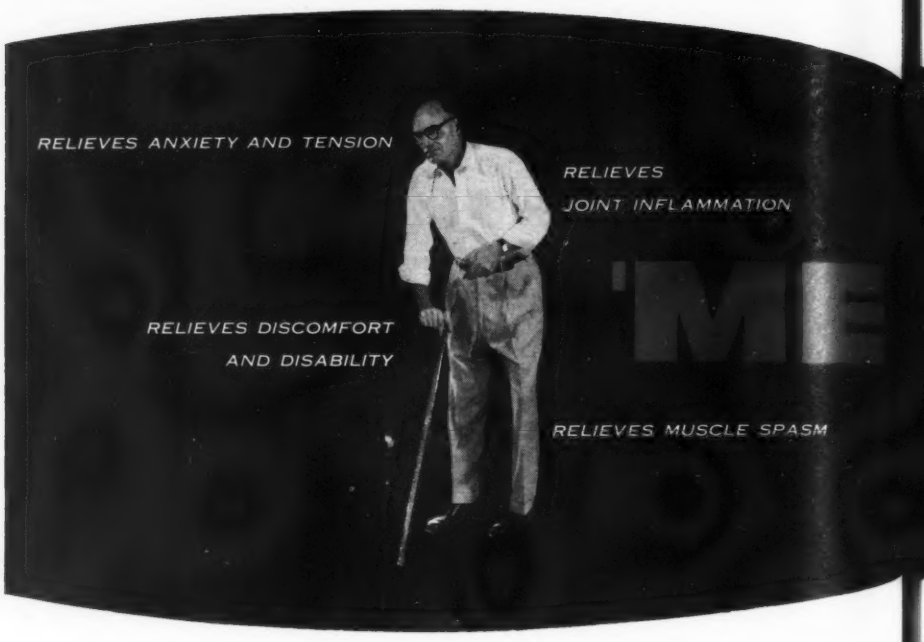

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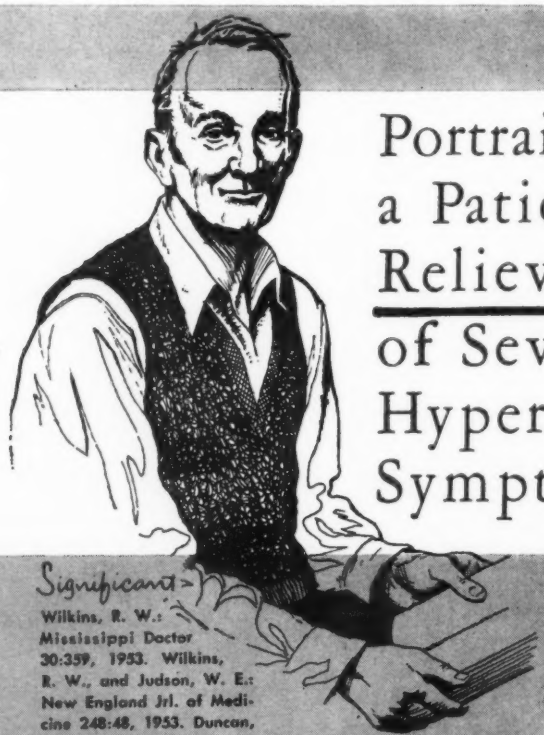

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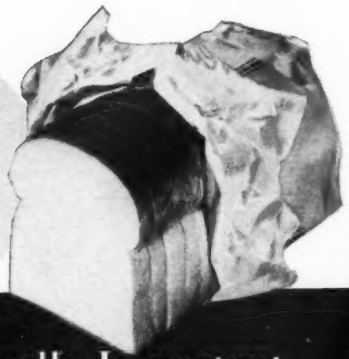

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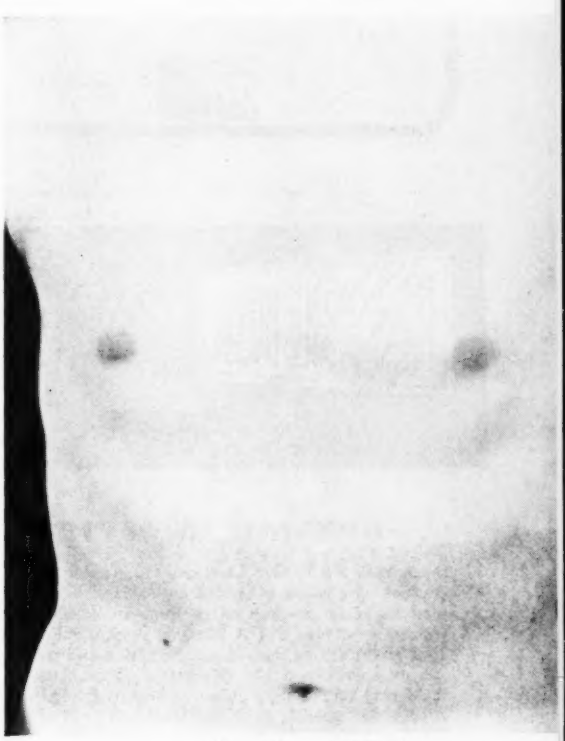

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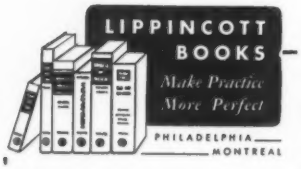

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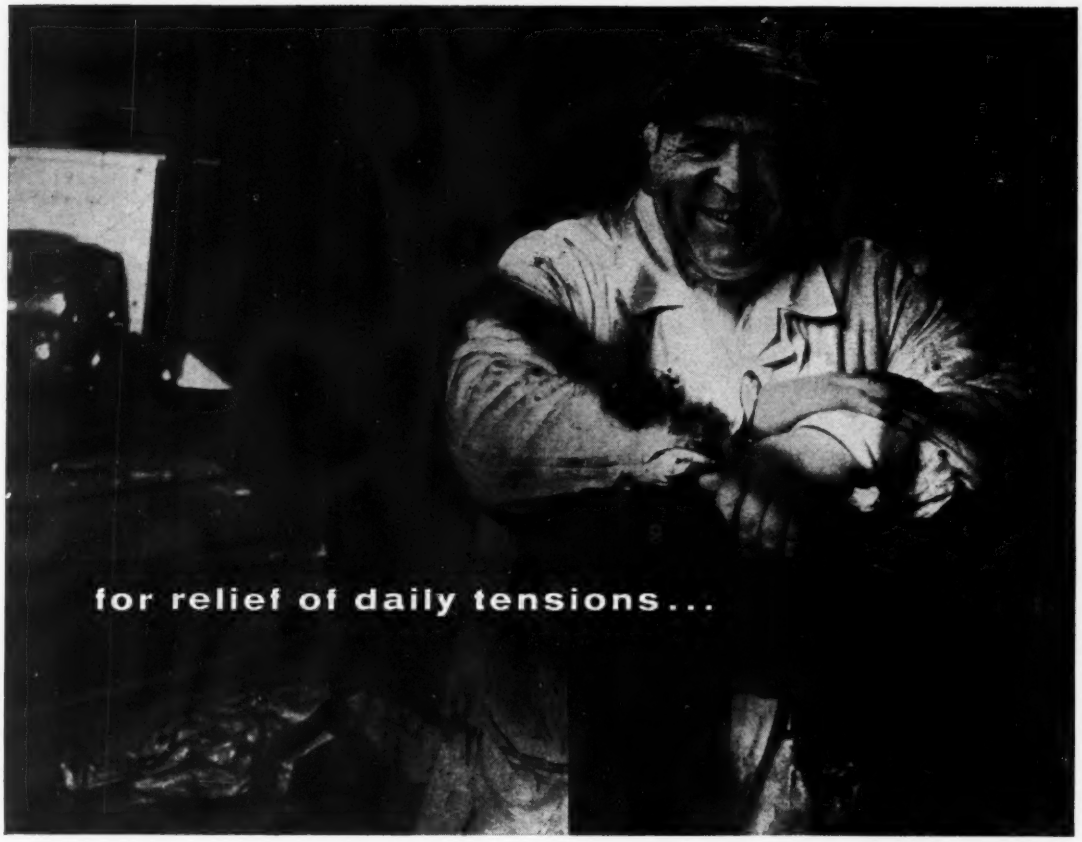

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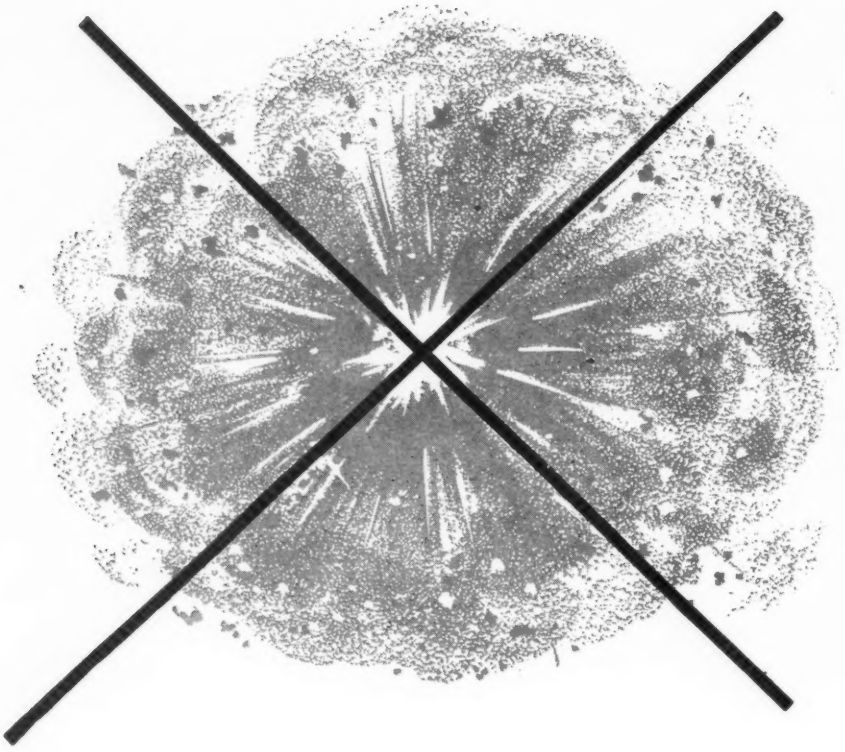

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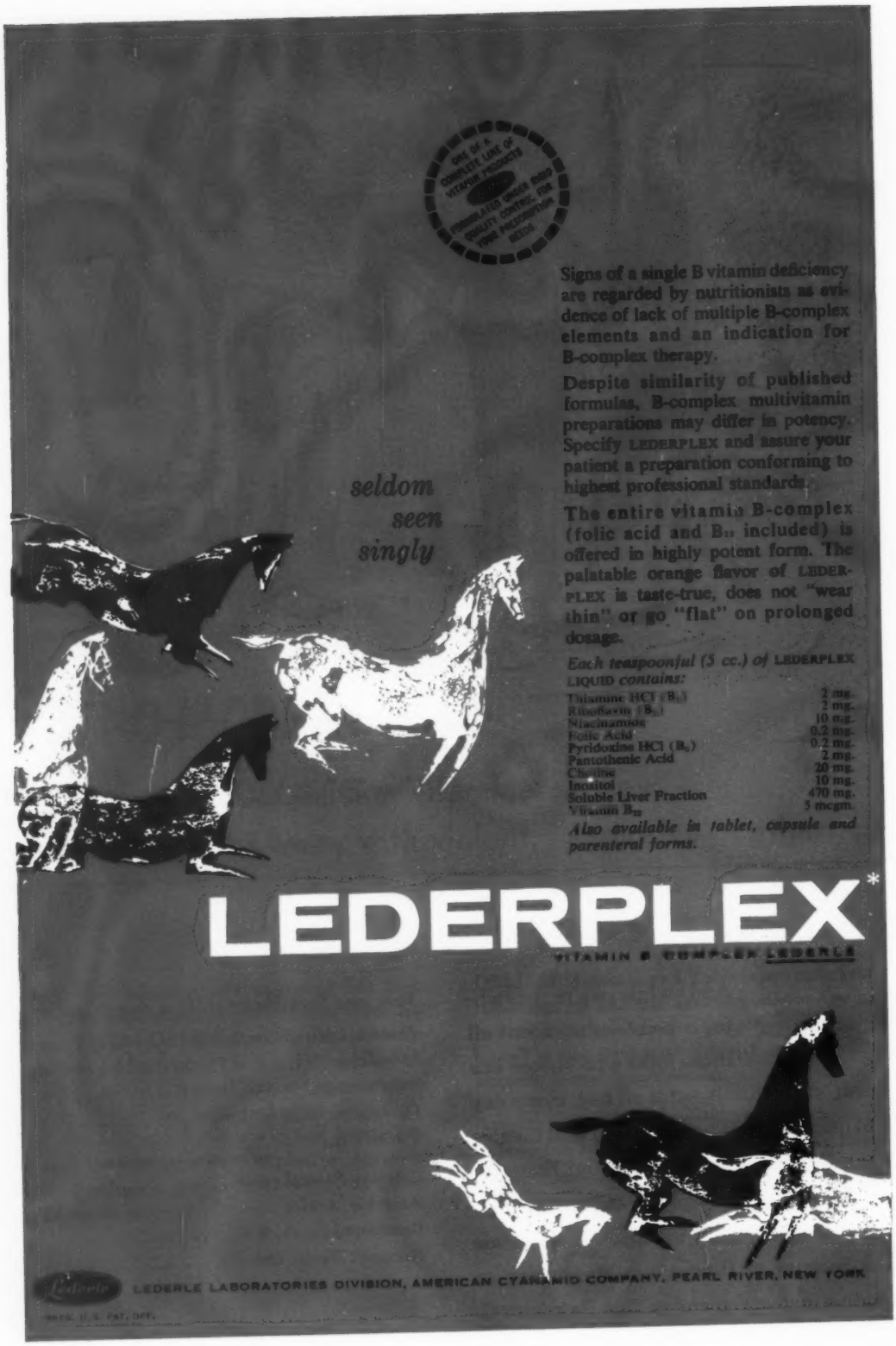
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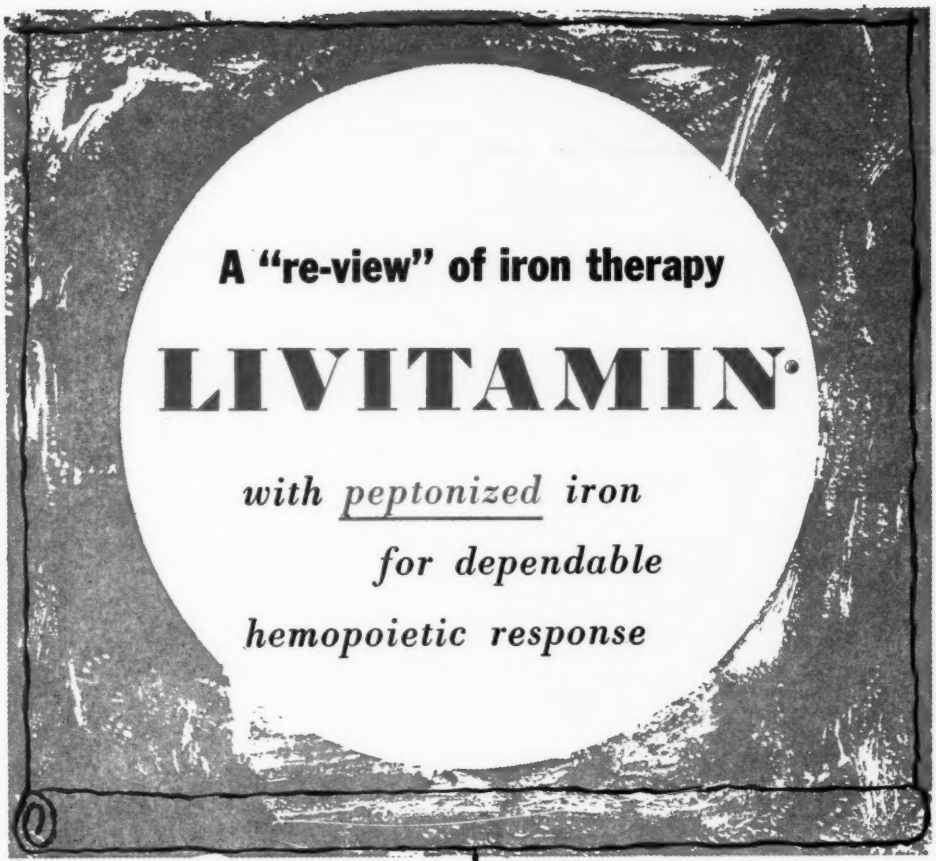

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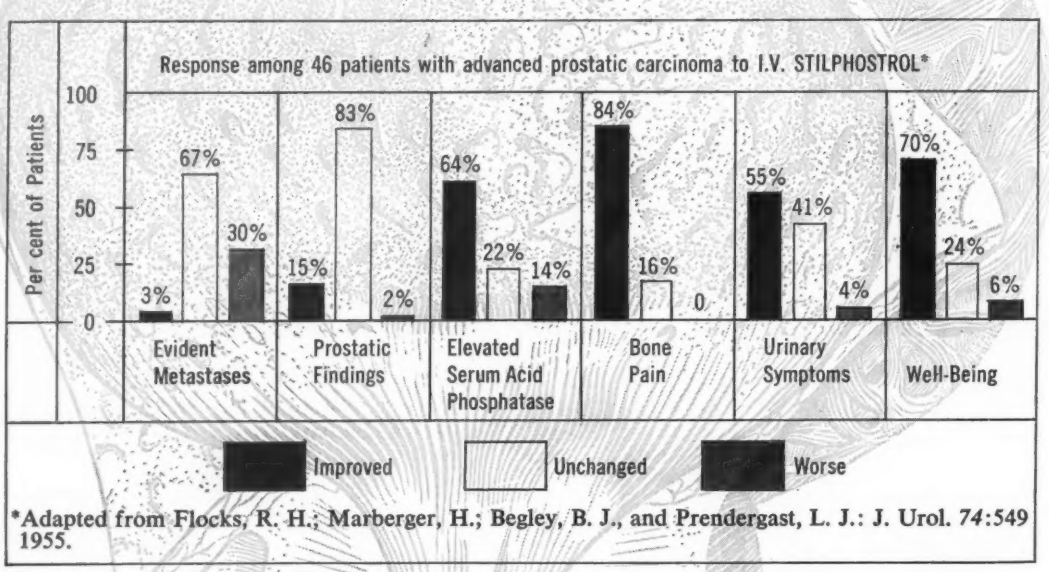

*Adapted from Flocks, R. H.; Marberger, H.; Begley, B. J., and Prendergast, L. J.: J. Urol. *74*:549 1955.

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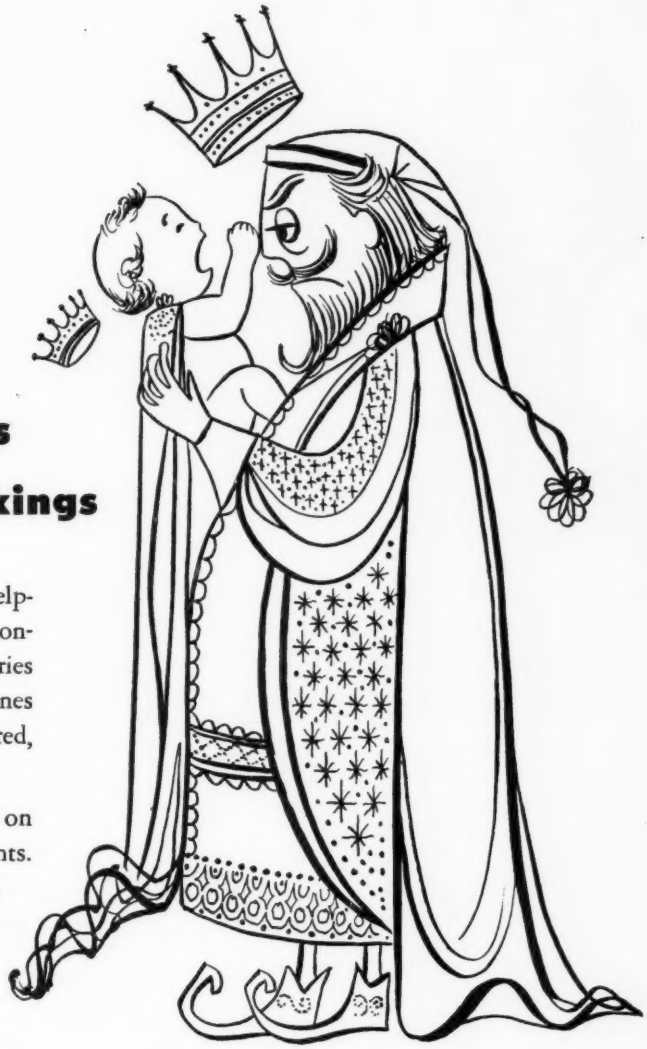

why 50 million fathers have been happier than kings

Through the ages, even royalty was often helpless where problems of infant feeding were concerned. Crowns quivered as the hungry cries echoed through the palace corridors. Thrones trembled as the wails of the princeling wavered, grew weaker. And there was no answer.

Through the years medical science worked on the problems of digestive disturbances in infants. Progress was gradually made, and then in 1929 medical research demonstrated that evaporated milk offered one of the most versatile and satisfactory solutions to bottle feeding problems.

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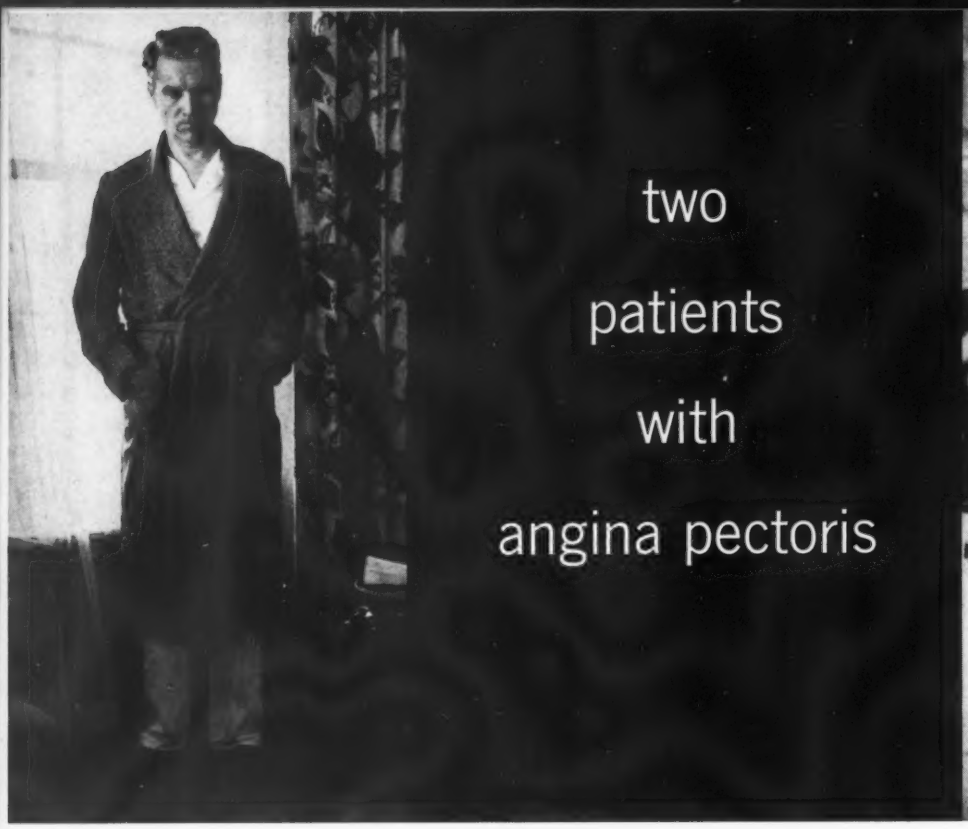

...your treatment can make *the difference*

In angina pectoris: ". . . the difference between complete, or almost complete, absence of symptoms, or a prolonged illness with much suffering" may lie in routine prophylaxis with Peritrate.[1]

New studies continue to confirm the effectiveness of this long-acting coronary vasodilator. "Impressive and sustained improvement" is observed in patients on Peritrate therapy.[2]

Simple prophylaxis: Peritrate is not indicated to abort the acute attack (nitroglycerin is still the drug of choice). However, you can reduce or eliminate nitroglycerin dependence and provide continuing protection against attacks of angina pectoris with Peritrate. Prophylaxis is simple: 10 or 20 mg. of Peritrate *before meals* and at bedtime. Maintenance of a continuous daily dosage schedule is important for successful therapy.

Peritrate has been demonstrated to prevent or reduce the number of attacks, lessen nitroglycerin dependence, improve abnormal EKG findings and increase exercise tolerance. [3,4,5]

The specific needs of most patients and regimens are met with Peritrate's five dosage forms: Peritrate 10 mg. and 20 mg. tablets; Peritrate Delayed Action (10 mg.) for continuous protection through the night; Peritrate with Phenobarbital (10 mg. with phenobarbital 15 mg.) where sedation is required; Peritrate with Aminophylline (10 mg. with aminophylline 100 mg.) in cardiac and circulatory insufficiency.

Usual Dosage: 10 to 20 mg. *before meals* and at bedtime.

References: **1.** Rosenberg, H. N., and Michelson, A. L.: Am. J. M. Sc. *230*:254 (Sept.) 1955. **2.** Kory, R. C., *et al.*: Am. Heart J. *50*:308 (Aug.) 1955. **3.** Winsor, T., and Humphreys, P.: Angiology *3*:1 (Feb.) 1953. **4.** Plotz, M.: New York State J. Med. *52*:2012 (Aug. 15) 1952. **5.** Dailheu-Geoffroy, P.: L'Ouest-Médical, vol. 3 (July) 1950.

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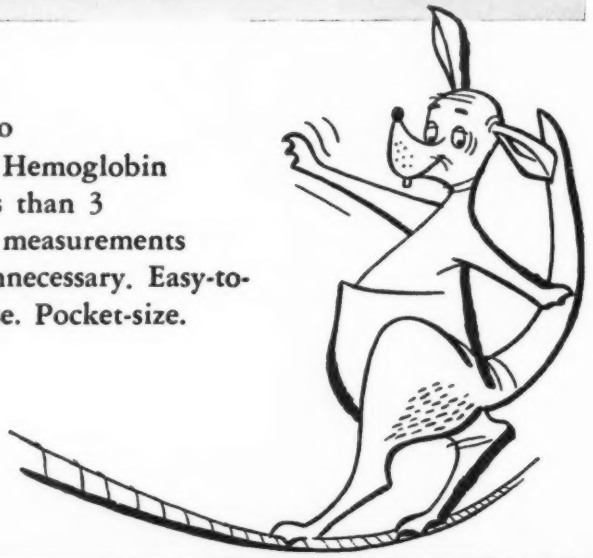

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Supplied: Bottles of 100 and 1,000 hard gelatin capsules.

1. Griffith, J. Q., Jr., Nagbski, J., and Krevoson, C. E.: Rutin and Related Flavonoids, Boston, Pa., Black Publishing Co., 1955.
2. Griffith, J. Q., Jr.; DeEds, F.; Nagbski, J., and Krevoson, C. E.: A.M.A. Arch. Int. Med. 94:1007, 1954.
3. Griffith, J. Q., Jr.: M. Clin. North America 38:1717, 1954.

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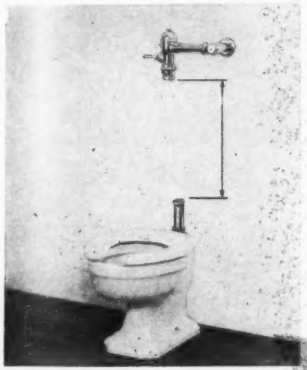

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Conventions and meetings

Announcements

American Osteopathic Association, Sixty-First Annual Convention, Hotels Adolphus, Baker, and Statler, Dallas, Texas, July 15-19. Program Chairman, Neil R. Kitchen, 18820 Woodward Ave., Detroit.

Academy of Applied Osteopathy, annual meeting, Dallas, Texas, July 19-20. Program Chairman, Margaret H. Raffa, 5009 Central Ave., Tampa 3, Florida. Secretary, Margaret W. Barnes, P. O. Box 1345, Carmel, California.

American College of Osteopathic Internists, annual meeting, Hotel del Coronado, Coronado, Calif., September 26-28. Program Chairman, Delmar Daniel, 400 N. Glenoaks Blvd., Burbank, Calif. Secretary, Glennard E. Lahrson, 460 Staten Ave., Oakland 10, Calif.
Midwestern Clinical Conference, Hotel Continental, Kansas City, Missouri, April 26-28. Address Milton S. Steinberg, Osteopathic Hospital of Kansas City, 926 E. 11th St., Kansas City 6.

American College of Osteopathic Surgeons, annual meeting, Sheraton-Jefferson Hotel, St. Louis, October 27-31. Program Chairman, Don E. Ranney, 793 N. Renaud, Grosse Pointe Woods 36, Mich. Executive Assistant, Mrs. E. F. Martin, Box 474, Coral Gables 34, Fla.

American Osteopathic Academy of Orthopedics, annual meeting, Sheraton-Jefferson Hotel, St. Louis, October 27-31. Secretary, J. Paul Leonard, 2673 W. Grand Blvd., Detroit 8.

American Osteopathic College of Anesthesiologists, annual meeting, Sheraton-Jefferson Hotel, St. Louis, October 27-31. Program Chairman, Lawrence Everett Giffen, 209 Monroe St., Jefferson City, Mo. Secretary, Crawford M. Esterline, Box 155, Kirksville, Mo.

American Osteopathic College of Radiology, annual meeting, Sheraton-Jefferson Hotel, St. Louis, October 27-31. Secretary, F. A. Turfler, Jr., South Bend Osteopathic Hospital, 118 S. William St., South Bend 2, Ind.

American Osteopathic Hospital Association, annual meeting, Sheraton-Jefferson Hotel, St. Louis, October 26-30. Executive Secretary, Mr. Heber Grant, 604 Kahl Bldg., 326 W. Third St., Davenport, Iowa.

1 tablet q. 12 h. to prevent angina pectoris

Provides full 24-hour protection for 8 out of 10 angina patients: In rigorous clinical trials,[1] METAMINE SUSTAINED improved 80 (78%) of 103 patients with angina pectoris, including a group refractory to other medication.

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[1]Fuller, H. L. and Kassel, L. E.: Antibiotic Medicine and Clinical Therapy, 3:322, October 1956.

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American Osteopathic Society of Proctology, annual meeting, Hotel Statler, Detroit, April 3-5. Program Chairman, John A. Brandon, 1814 Oberlin Ave., Lorain, Ohio. Secretary, Carl S. Stillman, Jr., 3523 Fifth Ave., San Diego 3, Calif.

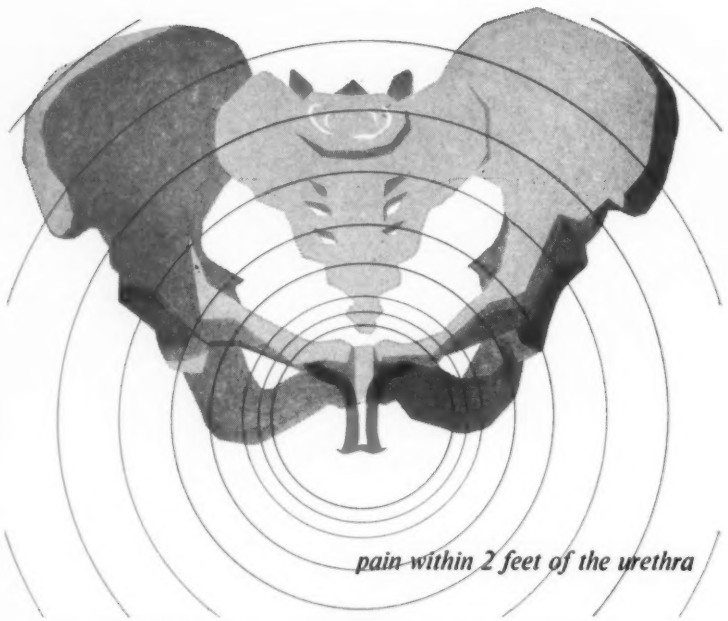
National Osteopathic Child Health Conference and Clinic, annual meeting, Municipal Auditorium, Kansas City, Mo., April 15-17. Program Chairman, Myron D. Jones, Osteopathic Hospital of Kansas City, 926 E. 11th St., Kansas City, Mo. Secretary, Luther W. Swift, 2105 Independence Ave., Kansas City 24, Mo.

Osteopathic College of Ophthalmology and Otorhinolaryngology, annual meeting, Statler-Hilton Hotel, Dallas, Texas, September 23-25. Executive Secretary, Clifford C. Foster, 1388 Gladys Ave., Lakewood 7, Ohio.

Arizona, annual meeting, San Marcus Hotel, Chandler, May 3-5. Program Chairman, R. D. Bennett, 115 W. First St., Mesa. Secretary, Homer E. Allhouse, 2243 N. 12th St., Phoenix 22.

Arkansas, annual meeting, Albert Pike Hotel, Little Rock, April 18-19. Program Chairman, Eugene M. Sparling, 222 Thompson Bldg., Hot Springs National Park. Secretary, John K. Rye, 812 S. Greenwood Ave., Ft. Smith.

California, annual meeting, Hotel del Coronado, Coronado, May 15-19. Ex-



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REFERENCES: 1. Youngblood, V. H.: J. Urol. 70:926, 1953. 2. Powell, E. M., and Wattenberg, C. A.: Tr. Southcentr. Sect. Am. Urol. Ass. Oct. 17-19, 1955. 3. Tudor, J. M.: J. Tennessee M. Ass. 49:181, 1956. 4. MacLeod, P. F.; Rogers, G. S., and Anzlowar, B. R.: Internat. Rec. Med. 169:561, 1956. EATON LABORATORIES, NORWICH, N.Y.

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Eastern Osteopathic Association, annual meeting, Hotel Statler, New York City, March 23-24. Program Chairman, Chester D. Losee, 212 Prospect St., Westfield, N.J. Secretary, Frank B. Tompkins, 309 Baltimore Life Bldg., Baltimore 1, Md.

Florida, annual meeting, Jacksonville, September 30-October 2. Program Chairman, Louis J. Larmoyeux, 124 E. Ashley St., Jacksonville 2. Secretary, Dominic Raffa, 5009 Central Ave., Tampa 3.

Georgia, annual meeting, King and Prince Hotel, St. Simons, May 9-11. Program Chairman, Walter B. Elliott, Jr., 702 Mortgage Guarantee Bldg., Atlanta 3. Secretary, Ruth McNeff Glass, 1432 Donnelly Ave., S.W., Atlanta 10.

Illinois, annual meeting, Hotel Sherman, Chicago, April 26-28. Program Chairman, S. V. Robuck, 25 E. Washington St., Chicago 2. Executive Secretary, Mr. D. O. Durkin, Rm. 521, 53 W. Jackson Blvd., Chicago 4.

Indiana, annual meeting, Marott Hotel, Indianapolis, May 19-21. Program Co-chairmen, Paul van B. Allen, 1500 N. Delaware St., Indianapolis 2, and H. E. Rinne, 519-20 Merchants Bank Bldg., Indianapolis 4. Secretary, Arabelle B. Wolf, 4840 N. Michigan Rd., Indianapolis 8.

Iowa, annual meeting, Savery Hotel, Des Moines, May 27-28. Program Chairman, R. S. Farran, Badgerow Bldg., Sioux City 9. Secretary, Mr. Herman W. Walter, 200 Walnut Bldg., Des Moines 9.

Kansas, annual meeting, Town House, Kansas City, May 4-8. Program Chairman, V. R. Cade, Cade Clinic Bldg., 816-818 Broadway, Larned. Secretary, Mr. Lloyd L. Hall, 121 E. 8th St., Topeka.

Kentucky, annual meeting, Brown Hotel, Louisville, October 16-17. Program Chairman, Paul E. Dunbar, 2505 Cherokee Highlands, Paducah. Secretary, Martha Garnett, 2829 Brownsboro Road, Louisville 6.

Maine, annual meeting, Samoset Hotel, Rockland, June 27-29. Professional Education Chairman, Donald P. Miller, Main St., Norridgewock. Secretary, Roswell P. Bates, 72 Main St., Orono.

Michigan, annual meeting, Grand Rapids, September 30-October 2. Program Chairman, Harold W. Laidlaw, McCoy-Laidlaw Clinic, Bad Axe. Secretary, P. Ralph Morehouse, 214 S. Superior St., Albion.

Midwestern Clinical Conference: See American College of Osteopathic Internists.

Minnesota, annual meeting, Lowry Hotel, St. Paul, May 2-4. Program Chairman, M. Sidney Hedeen, 1595 Selby Ave., St. Paul 4. Secretary, E. R. Komarek, 301 Granite Exchange Bldg., St. Cloud.

New Mexico, annual meeting, Navajo Lodge, Ruidoso, May 16-18. Program Chairman, Lory Baker, 400 N. Church St., Las Cruces. Secretary, Robert E. Smith, 205 N. First, Lovington.

Northwest Osteopathic Convention, Multnomah Hotel, Portland, Oregon, June 17-20. Program Chairman, Russell F. Kenaga, 2265 W. Burnside St., Portland 5, Ore.

Ohio, annual meeting, Neil House Hotel, Columbus, May 5-8. Program Chairman, Donald Siehl, 701 Salem Ave., Dayton 6. Secretary, Mr. William S. Konold, 53 W. Third Ave., Columbus.

Ontario, annual meeting, Orillia, May 2-4. Program Chairman, C. V. Hinsperger, 806 Canada Bldg., Windsor. Secretary, A. V. DeJardine, 205 Yonge St., Toronto 1.

Oregon: See Northwest Osteopathic Convention.

Pennsylvania, annual meeting, Chalfonte-Haddon Hall Hotels, Atlantic City, New Jersey, September 12-14. Program Chairman, Robert Friedman, 1201 Wal-

nut St., Allentown. Executive Secretary, Mr. George W. Thomas, 1941 Market St., Harrisburg.

South Dakota, annual meeting, Huron, June 2-3. Program Chairman, F. A. Nutter, Jr., Box 368, Beresford. Secretary, Earl W. Hewlett, 417 W. 27th St., Sioux Falls,

Tennessee, annual meeting, Graystone Hotel, Gatlinburg, April 28-May 1. Program Chairman, L. D. Elliston, 707 S. Main St., Covington. Secretary, J. W. Moore, Jr., 200 High St., Trenton.

Texas, annual meeting, Plaza Hotel, San Antonio, May 2-4. Program Chairman, Myron S. Magen, 5101 Ross Ave., Dallas 6. Secretary, Phil R. Russell, 512 Bailey St., Fort Worth 7.

Washington: See Northwest Osteopathic Convention.

West Virginia, annual meeting, Daniel Boone Hotel, Charleston, June 2-4. Program Chairman, Frank E. Pick, 4410 McCorkle Ave., S.W., South Charleston 3. Secretary, Guy E. Morris, 542 Empire Bank Bldg., Clarksburg.

Western States Osteopathic Society of Proctology, annual meeting, Riviera Hotel, Las Vegas, Nevada, October 7-9. Program Chairman, Marcus S. Gerlach, 2015 State St., Santa Barbara, California. Secretary, Earle F. Waters, 925 E. South Temple St., Salt Lake City 2, Utah.

Wisconsin, annual meeting, Wisconsin Hotel, Milwaukee, April 29-May 1. Program Chairman, I. J. Ansfield, 1500 E. Brady St., Milwaukee 2. Secretary, Edwin J. Elton, 1518 N. 70th St., Wauwatosa 13.

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State and national boards

ALABAMA

Examinations June 25-27. Address D. G. Gill, M.D., secretary, State Board of Medical Examiners, State Office Building, Montgomery 4.

ARIZONA

Professional examinations June 13-15. Applications must be filed not less than one month prior to examination. Address Russell Peterson, D.O., secretary, Osteopathic Board of Registration and Examination in Medicine and Surgery, 2747 East McDowell Road, Phoenix.

Basic science examinations June 18 at the University of Arizona, Tucson. Applications must be filed 2 weeks prior to examination. Address H. D. Rhodes, Ph.D., secretary, Basic Science Board, University of Arizona, Tucson.

COLORADO

Professional examinations during June at Denver. Address Mrs. Beulah H. Hudgens, executive secretary, State Board of Medical Examiners, 1612 Tremont Place, Denver 2.

Basic science examinations May 1-2, Y.M.C.A. Bldg., E. 16th Ave. and Lincoln St., Denver. Applications must be filed by April 17. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 18.

DISTRICT OF COLUMBIA

Professional examinations May 13-14. Address Mr. Paul Foley, Deputy Director, Dept. of Occupations and Professions, 1740 Massachusetts Ave., N.W., Washington 6.

Basic science examinations April 22-23, 1740 Massachusetts Ave., N.W., Washington. Applications must be filed on or before April 1. Address Mr. Foley.

FLORIDA

Professional examinations in June. Address W. S. Horn, D.O., secretary, Board of Osteopathic Medical Examiners, P.O. Box 85, Palmetto.

Basic science examinations in June. Address Dr. Horn.

HAWAII

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IDAHO

Professional examinations June 13 at Boise. Address Margaret Gilbert, Director, Occupational License Bureau, Department of Law Enforcement, State House, Boise.

ILLINOIS

Examinations April 1-4 and June 17-20 in Chicago. Address Mr. Frederic B. Selcke, Superintendent of Registration, Department of Registration and Education, State House, Springfield.

IOWA

Basic science examinations April 9 at the Capitol Bldg., Des Moines. Address Ben H. Peterson, Ph.D., secretary, Board of Basic Science Examiners, Coe College, Cedar Rapids.

KANSAS

Professional examinations in June. Address C. A. Welker, D.O., secretary, State Board of Osteopathic Examination and Registration, J. C. Penney Building, Concordia.

MAINE

Professional examinations June 11-12. Address George Frederick Noel, D.O., secretary, Board of Osteopathic Examination and Registration, Monument Square, Dover-Foxcroft.

MARYLAND

Professional examinations in June. Address Christopher L. Ginn, D.O., secretary, State Board of Osteopathic Examiners, 419 Charles St., Baltimore 1.

MICHIGAN

Basic science examinations May 10-11. Address Mrs. Anne Baker, secretary, Board of Examiners in the Basic Sciences, 116 Mason Building, Lansing.

MINNESOTA

Basic science examinations April 2-3 and June 4-5. Address Raymond N. Bieter, M.D., secretary, Board of Examiners in the Basic Sciences, 105 Millard Hall, University of Minnesota, Minneapolis 14.

MISSISSIPPI

Professional examinations in June. Address R. N. Whitfield, M.D., assistant secretary, State Board of Health, Jackson.

NEBRASKA

Basic science examinations May 7-8. Address Mr. Husted K. Watson, director, Bureau of Examining Boards, Department of Health, State Capitol Bldg., Lincoln 9.

NEVADA

Basic science examinations April 2. Address Donald G. Cooney, Ph.D., secretary, Board of Examiners in the Basic Sciences, Box 9005, University Station, Reno.

NEW JERSEY

Professional examinations on June 18. Address Patrick H. Corrigan, M.D., acting secretary, Board of Medical Examiners, 28 W. State St., Trenton.

NEW MEXICO

Basic science examinations April 21. Address Mrs. Marguerite Cantrell, secretary, Board of Examiners in the Basic Sciences, P.O. Box 1522, Santa Fe.

Officers of the State Board of Osteopathic Examination and Registration are Paul S. Jones, D.O., Las Cruces; Walter E. White, D.O., Albuquerque, vice-president; and Harold E. Donovan, D.O., Raton, secretary-treasurer. Member George C. Widney, Jr., D.O., Albuquerque, will serve until 1960; L. D. Barbour, D.O., Roswell, until 1961.

OHIO

Examinations June 13-15 in Columbus. Applications should be filed no later than June 5. Address H. M. Platter, M.D., secretary, State Medical Board, 21 West Board St., Columbus 15.

RHODE ISLAND

Professional examinations April 4-5. Address Mr. Thomas B. Casey, Administrator of Professional Regulation, 366

State Office Bldg., Providence.

Basic science examinations May 15. Applications must be filed 21 days in advance. Address Mr. Casey.

SOUTH CAROLINA

Examinations June 18 at Columbia. Address Ernest A. Johnson, D.O., secretary-treasurer, State Board of Osteopathic Examiners, Box 525, Summerville.

SOUTH DAKOTA

Basic science examinations in June. Address Mr. John C. Foster, executive secretary, Board of Medical and Osteopathic Examiners, Room 300, First National Bank Building, Sioux Falls.

TEXAS

Professional examinations June 24-26 at the Texas Hotel in Fort Worth. Applications for examination must be filed by June 14. Applications for reciprocal licensing must be filed by May 24. Address M. H. Crabb, M.D., secretary, State Board of Medical Examiners, 1714 Medical Arts Building, Fort Worth 2.

Basic science examinations will be given April 12 and 13 in Austin, Galveston, and Houston. Upon request by a large number of area applicants, the examinations will also be given in Dallas. All arrangements must be completed a week before the examination date. Address Mrs. Pearl A. Barrera, Chief Clerk, State Board of Examiners in the Basic Sciences, 407 Perry-Brooks Building, Austin.

VERMONT

Examinations in June. Address Charles D. Beale, D.O., secretary, Mead Building, Rutland.

WISCONSIN

Basic science examinations Saturday, April 6, 8:00 a.m., at Hotel Lorraine, Madison, and Saturday, June 1, at Milwaukee. Applications must be filed by March 29 and May 24, respectively. Address Mr. W. H. Barber, secretary, State Board of Examiners in the Basic Sciences, Ripon College, Ripon.

WYOMING

Examinations June 3 at Cheyenne. Address Franklin D. Yoder, M.D., secretary, State Board of Medical Examiners, New State Office Building, Cheyenne.

ALBERTA

Examinations in April. Address Mr. G. B. Taylor, Acting Registrar, Alberta Medical Board, Office of the Registrar, University of Alberta, Edmonton, Canada.

Reregistration of osteopathic licenses

April 1—Montana, $2.00 for those in active practice, $1.00 for those inactive. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

April 1—Wyoming, $2.50. Address Franklin D. Yoder, M.D., secretary, Board of Medical Examiners, New State Office Bldg., Cheyenne.

May 1—Iowa, $1.00. Address Mr. Herman W. Walter, assistant secretary, Board of Osteopathic Examiners, 200 Walnut Bldg., Des Moines 9.

May 1—Washington, $2.00. Address Mr. Edward C. Dohm, secretary, Professional Division, Department of Licenses, Olympia.

May 24—Texas, reciprocity applications. Address M. H. Crabb, M.D., secretary, State Board of Medical Examiners, 1714 Medical Arts Bldg., Fort Worth 2.

During June—Hawaii, $5, residents, $2 for non-residents. Address Frank O. Gladding, secretary-treasurer, Board of Osteopathic Examiners, 504 Kauikeolani Building, Honolulu 13.

Before June 30—Delaware, $20.00. Address Joseph S. McDaniel, M.D., secretary, State Board of Medical Examiners, 229 S. State St., Dover.

June 30—Virginia, $1.00. Address K. D. Graves, M.D., secretary, Board of Medical Examiners, 631 First St., S. W., Roanoke.

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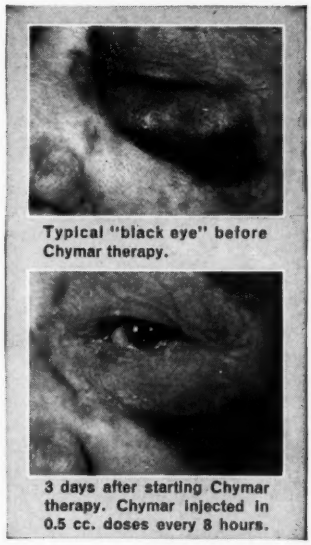

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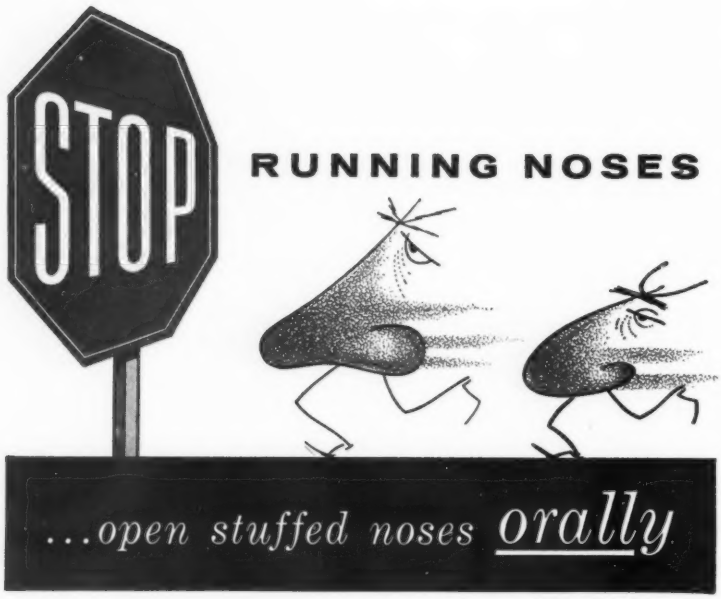

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Examination by National Board

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary or the dean of the college, and the completed application blank, together with a passport photograph and check for the parts to be taken, must be in the secretary's office by the November 1 or April 1 preceding the examination.

Examinations in Part I consist of anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; and bacteriology, including parasitology and immunology.

Part II consists of examinations in surgery, including applied anatomy, surgical pathology, and surgical specialties; obstetrics and gynecology; pediatrics, neurology and psychiatry; public health, including hygiene, medical jurisprudence; osteopathic principles, therapeutics, including pharmacology and materia medica.

Part III is an oral and practical examination given under the supervision of a chief examiner who is a member of the Board and by a panel of associate examiners. Subjects covered in Part III are anatomy; physiology; pathology; osteopathic principles; therapeutics, and pharmacology; surgery; ophthalmology and otorhinolaryngology; obstetrics and gynecology; physical and clinical diagnosis; public health and communicable diseases.

These are oral examinations which the candidate may take after having satisfactorily completed the first 6 months of a 1 year internship in a hospital approved by the American Osteopathic Association for intern training. Part III is given annually at the Philadelphia, Kirksville, and Los Angeles colleges.

Eligibility requirements are as follows: Part I, satisfactory completion of the first 2 years in an approved school of osteopathy; Part II, satisfactory completion of Part I and of the first two quarters or trimesters of the senior year in an approved osteopathic college; Part III, satisfactory completion of Part II and at least 6 months of a 1-year internship approved by the American Osteopathic Association. The internship requirement does not apply to candidates who took Part I prior to July, 1950.

Applications must be filed with the secretary of the Board not less than 30 days prior to the examination dates. Address Paul van B. Allen, D.O., secretary, 1512 N. Delaware Street, Indianapolis 2, Indiana.

Specialty board examinations

ANESTHESIOLOGY

Examination October 26, 9:00 a.m., Sheraton-Jefferson Hotel, St. Louis, Missouri. Address Crawford M. Esterline, D.O., secretary, American Osteopathic Board of Anesthesiology, P.O. Box 155, Kirksville, Mo.

INTERNAL MEDICINE

Written and oral examinations September 22-23 at the Hotel del Coronado, Coronado, California. Applications must be filed before April 1. Address Glennard E. Lahrson, D.O., secretary-treasurer, American Osteopathic Board of Internal Medicine, 460 Staten Ave., Oakland 10, Calif.

NEUROLOGY AND PSYCHIATRY

Oral examinations in November, written tests in February, and clinical examinations in May or June. Applications must be filed no later than October 1. Address Thomas J. Meyers, D.O., secretary-treasurer, American Osteopathic Board of Neurology and Psychiatry, 234 East Colorado St., Pasadena 1, Calif.

PATHOLOGY

Examination July 12, 9:00 a.m., Dallas Osteopathic Hospital, Dallas, Texas. Address Norman W. Arends, D.O., secretary, American Osteopathic Board of Pathology, 13119 Sherwood Drive, Huntington Woods, Michigan.

PEDIATRICS

Examinations July 9-12 in Dallas, Texas. Address Evangeline N. Percival, D.O., secretary, American Osteopathic Board of Pediatrics, 1721 Griffin Ave., Los Angeles 31, California.

PHYSICAL MEDICINE AND REHABILITATION

Examinations July 12-13 in Dallas, Texas. Address Robert C. Ruenitz, D.O., secretary-treasurer, American Osteopathic Board of Physical Medicine and Rehabilitation, 3122 W. Vernon Ave., Los Angeles 8.

PROCTOLOGY

Examination July 13 in Dallas, Texas. Address Carlton M. Noll, D.O., secretary, American Osteopathic Board of Proctology, Box 47, Evergreen, Colorado.

RADIOLOGY

Examinations October 25-26 in St. Louis, Missouri. Address D. W. Hendrickson, D.O., secretary, American Osteopathic Board of Radiology, 3429 East Douglas Ave., Wichita 8, Kansas.

SURGERY

Examinations October 26-27 in St. Louis, Missouri. Applications for examination in specialty fields of surgery, gynecological surgery, neurosurgery, orthopedic surgery, peripheral vascular surgery, plastic surgery, urological surgery must be received prior to April 1. Address Mrs. E. F. Martin, corresponding secretary, American Osteopathic Board of Surgery, P. O. Box 474, Coral Gables, Florida.

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Adjustment to school entry*

Kenneth Soddy, M.D.

A subject like school entry is likely to have as many different aspects to consider as there are varying communities and cultures. In discussing them I shall confine myself to my own culture, while attempting to present my case in the form of general principles that have a reasonably wide validity. Perhaps the most important aspect concerns the expectations of the children themselves regarding school. In this respect, in Great Britain, for more than 80 years, every child has expected to go to school at the age of 5. This fact establishes a very significant set of conditions.

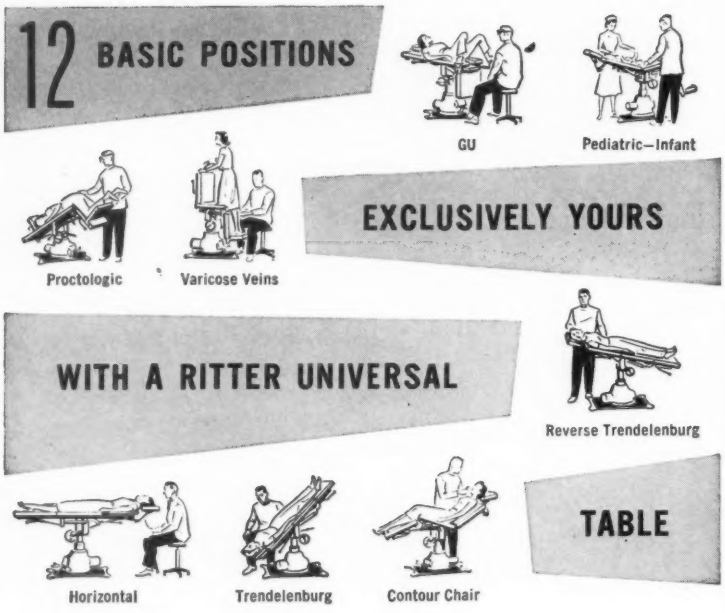
School is a product of civilization, unnecessary in primitive society. Even in a highly civilized community that is traditional and agrarian, probably only 2 or 3 per cent of the people need to be literate, for nothing will happen to them that cannot be dealt with by invocation of precedent or by memory. Margaret Mead has defined the concept of the wholeness of human beings who are protected always by well-known and closely related people.[1] Such people have no need of extra-familial learnings to enable them to cope adequately with life.

Dr. Mead has also referred to the price paid by people for the style of life they lead. This price in an ultra-stable, unchanging, underdeveloped community, such as can still be found today in Samoa, is paid by people with unusual gifts for whom the community has no place. On the other hand, as civilization begins to increase the complexity of life, the family cannot supply everything that the child needs to equip him, and one price to be paid by the developing community may be the necessity for some or all of its children to adjust to school. At least, as towns develop, the need for literacy will increase; and so schools will be started, at least for the few.

Illiteracy cannot be tolerated in a modern, urbanized, industrialized community. Great Britain was among the first, if not the first, country to experience industrialization and is now one of the most intensively industrialized. For nearly 200 years an enormous volume of internal migration has taken place there, and during the last 100 years the pace of

*Reprinted from *Children*, Jan.-Feb. 1957. Based on a paper presented at the Ninth Annual Meeting of the World Federation for Mental Health, Berlin, Germany, August 1956.

†Assistant Director, World Federation for Mental Health, London, England



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social change has been ever increasing. We have reaped one very great advantage from our role as a pioneer—that the change has not been forced upon us by purely external circumstances, so that it has proceeded at a pace no faster than that to which the community has been able to adapt itself. We have evolved new forms of social living, new social habits that have enabled us to maintain an unbroken cultural development, in spite of profound change. We have also suffered greatly from our position as pioneer in having no guidance from other peoples' experience, so that we have despoiled an undue proportion of our resources.

Growing recognition of the necessity for a literate population culminated in Britain, in the 1870's, in the momentous social innovation of compulsory, universal, primary education in schools. We are now in our fourth generation of compulsory school attendance, and none of us can remember an era in which all children did not go to school. Nobody, least of all the child himself, questions the assumption that a child will go to school at the age of 5. On the whole our children are well adjusted to the prospect. Of course, 5 years is an earlier school entrance age than most countries have, but I believe that the actual age of entry is a less important influence than the expectations of all concerned.

We have, in fact, gone one stage further than mere unquestioning acceptance of school. For many years, if an individual child happened not to be ready for school at the usual time, it was assumed that there must be something wrong with the child, the parents, or both. Nowadays, the whole subject is becoming more self-conscious: we are aware that school is an artificial and not a natural affair; some of us recognize the illogicality of dooming a child to be abnormal for not being ready at an arbitrarily determined age to do something quite artificial. We are beginning to recognize a possible need to prepare child and family for school entry and to study factors that make for adjustment, or which disturb children in the easy acceptance of duties that society thrusts upon them.

CHILD FACTORS

Let us now examine briefly some of these adjustment factors from the angle of child development. It is very remarkable how the two main factors—learning and maturation—are inextricably mixed up from the very first. For example: the sucking of the newborn infant results from an innate reflex, but it is inefficient. Within 1 week of a child's birth his sucking will have developed into an efficient feeding process. Typically, learning in early childhood takes place speedily on top of an innate pattern of maturation. Resulting skills will then contribute to the child's capacity to acquire yet new experience, and in this manner education will proceed, by a kind of spiral.

One might generalize that all learning is positively oriented, either directly or indirectly, toward the fulfillment of instinctual drives, to overcome their frustration, or in pursuit of the sublimation of an instinct. When mental conflict is present, learning may be oriented away from the instinctual direction, that is, negatively to the instinct.

Successively in time, man is a solitary, then a social, then a reproducing animal. Clearly, no child will be ready for school until he has become a social animal. How does he achieve this? First, the necessity for the establishment of independent life and for growth makes feeding the primary concern of the infant, and the alimentary route of learning infinitely the most important. A very few weeks later, the baby's manifold activities involving movement and space become important as a route of learning about himself and the environment. From his infantile position of egocentricity, helplessness, privilege and feelings of power the baby grows up, first by the formation of a relationship with his mother, then by progressive modification and control of his instinctual drives, by orientation in space and in family life, differentiation of sex, formation of social relations, and so on. In all of these processes, maturation and learning are inextricably mixed up.

Modern studies in animal ethology have rediscovered the fact, neglected in the first flush of enthusiasm for the dynamic psychology of the individual, that man is a herd animal. Once again scientists are beginning to recognize the exist-

ence of certain primary instinctual drives toward the formation of social relationships and the inhibition of egocentric and antisocial trends. Normally the child's mother will meet these drives more than half way and between the two a firm, if simple, relationship develops.

So important are social trends in the baby that when he is only a few months old, at the first major clash between egocenter and social instinct, victory goes to the latter. The cardinal example is in weaning, when the child, by virtue of the social relationship that has grown up with the mother, abandons the easy and well-practiced process of feeding by sucking and acquires the new and initially difficult skill of feeding by biting and chewing. Success in this transfer is rewarded by a more varied diet, joy of achievement, a greatly enhanced relationship with the mother, an increased sense of self, and, most important, a favorable attitude toward any future new experiences introduced to him by his mother.

This is one of the great paradoxes of child development: the triumph of social over ego-centered instinct results in the firm establishment of self. If the egocentered instinct were to prevail, the child's babyishness would be confirmed, his sense of self in relationship to the environment would be weakened, and he would be likely to show resistance to or rejection of change thereafter.

In succession the great learning experiences of the toddler go on, and each new attainment and skill is gained with mother's help and, in a sense, for mother's sake. Social drives are strengthened, ego-centered drives are weakened and the self becomes more and more established in true perspective in the environment. With the help of the mother the original instinctual drives of the baby become modified and directed toward objects further into the future and more acceptable socially. The child's success in this will strengthen the self to such a degree that he will become capable of undertaking for himself the control of his own instinctual drives. This vitally important development will free him for new acquisitions and new learning experiences by himself and without the help of his mother.

A parallel development of profound importance is that the child's relationship with his mother will itself undergo changes and developments that permit him to form relationships with other adults. He will give up both his absolute dependence and his absolute demands upon his mother and will transfer something of his relationship with her to his father, to other adult relatives and, rather later, to other adults too. This opens up the possibility of the child's being capable of learning from a school teacher. Concurrently, his relationship system will begin to include his brothers and sisters, in mutual affection as well as rivalry, and, later, other children as well. The child will be ready to enter school, to the extent that he has been able to give up his infantile need to be the center of love, is able to take his place as a member of a group of equals, and is able to transfer part of his relationship with his mother to other adults.

There is, therefore, a threshold of development below which it is not reasonable to require a child to adapt to school. If I may recapitulate, the threefold aspects of development required are: 1) ability to tolerate not being the sole center of love in the family; 2) a sufficient degree of emancipation from the exclusive tie of mother love to be able to transfer part of his dependent relationship on to other adults; 3) ability to enter contemporary child society on a basis of equality, of give as well as take.

DANGER SIGNALS

If the child has failed to adjust anywhere along this line of development he may be in a situation in which he will be compelled by environmental pressure to undertake a new development for which he will be ill-equipped. Children so placed show, almost universally, the phenomenon of regression, or the reversion to an earlier and younger pattern of behavior.

Reverting to younger ways is normal enough as a transient phenomenon, passing off within a few minutes or as soon as the child's attention is diverted to something else. Most children show a diurnal variation in this respect—they will spend the last half-hour of the day at a younger level of behavior than the rest of the day. Regression, however, can be more permanent and can be an

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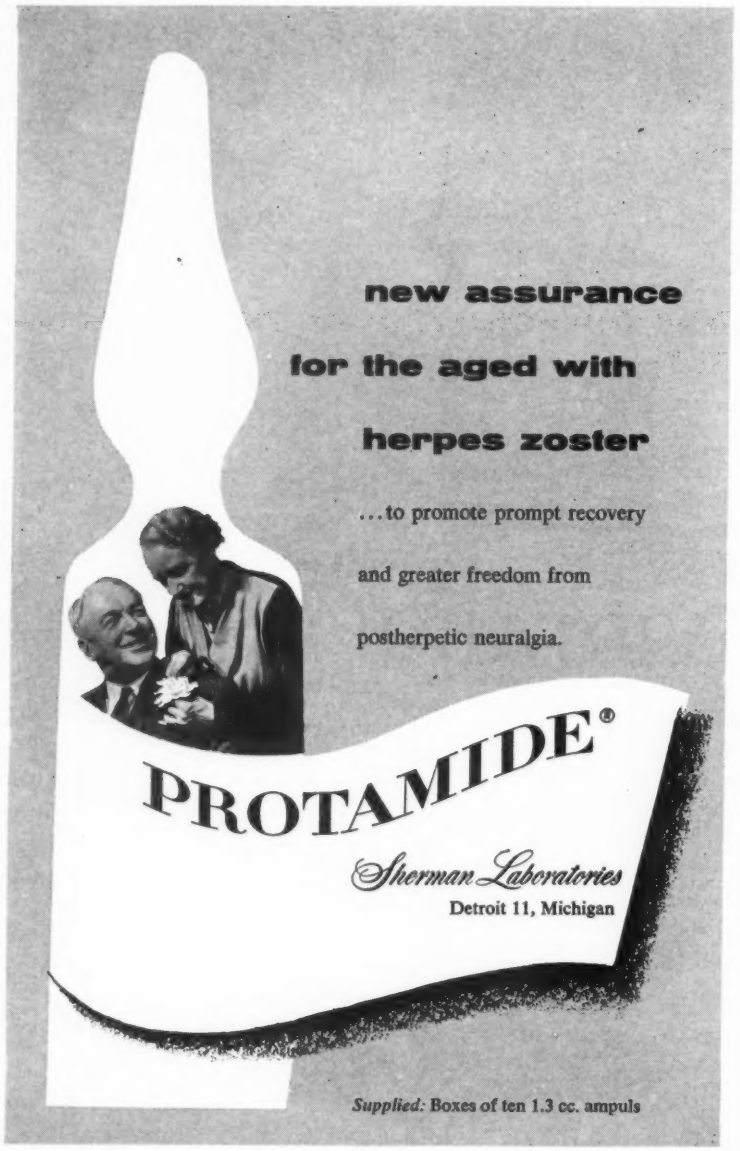

apparently irreversible return to a younger type of behavior. When this has happened the child will show up as being babyish. In our culture at least, we find it very difficult to tolerate a babyish child. A regressed 5- or 6-year-old will stand the risk of being repudiated by parents and siblings, teachers, and other children. In this sphere, nothing fails like failure; everyone is hard on the regressed child and this will serve to fortify his regression and greatly increase his difficulties.

In addition to the almost ubiquitous regression, there are three types of reaction that are danger signals that a child is not adjusting well to school:

1. Withdrawal. Commonly among introverted or in-turning children difficulty will be indicated by a daydreaming, wool-gathering slowness that has all the worse after-effects because the child's developing intellectual powers at this age will enable him to get his emotional satisfactions in fantasy rather than in the real world.

2. Overactivity. Extraverted or out-turning children may become overtly anxious, over-active and over-excitable. Such a child will be highly distractible, restless, and grasshopper-minded and his teacher may report of him that "he cannot concentrate." This report, one feels, is neither more nor less than the simple truth.

3. Inhibitions. Most serious of the danger signals, this can occur both among in-turning and out-turning children. Among the former the reaction of inhibition will be painfully apparent: the inhibited, in-turning child will be rigid, shy, withdrawing, incapable of spontaneity of response or of friendship, and most obviously miserable.

On the other hand, an inhibited, out-turning child may exhibit puzzling paradoxes in behavior. At first glance he may appear to be easy, friendly and unremarkable; he will not attract the hostility of other children as does his more in-turning opposite number; but his very easiness and openness may mask a painful degree of inhibition of effort. Without inhibition he would, perhaps, be boisterous and cyclothymic; but with inhibition, because of the extraversion of his temperament he merely shows up as being passively open-natured. He will usually be quiet, well-behaved and even over-controlled, but he will also probably have a striking tendency to fly into panic rage states when circumstances get beyond his powers of control. Thus there will be a paradox that though he will be passively friendly in society he will, in fact, be a poor mixer; though he is unable to stand up for himself and unable to express his emotions he may, at times, display a quite frightening degree of violence.

In class the inhibited extrovert will do little or nothing, and this will puzzle his teachers because he will not appear to be inattentive and daydreaming like the in-turning child, nor restless, distractible and naughty like the out-turning child. Commonly teachers fall back on that age-old formula: "He is lazy," or "bone idle." Yet, in my experience, it is rare to find a really lazy child. No doubt many children will shirk uncongenial tasks, but something can always be found into which a child can pour his energies without stint. This is not so in the case of inhibited children. They seem to be incapable of any form of direct expression of aggression and in school are no more capable of "attacking" their lessons than of fighting the other children. One such child had as a report from his teacher: "Could do better if he tried," but as my colleague, Dr. Mildred Creak, remarked: "The truth of the situation would have been better expressed by reporting, 'could try if he were better'."[2]

FAMILY FACTORS

Let us now turn to consider some of the family and social aspects of school adjustment. We have noted that school is a product of a highly differentiated type of urban civilization. It is unnecessary in an agrarian culture in which all the educational experiences that are required can be provided within the extended kinship system. But the product of such a system will be an extreme narrowness of interest and a lack of adaptability to change.

In our modern towns the families have broken up into simple units, and intercourse between the various generations has become less intimate. Family life has long since ceased to encompass within it all that a child need know. As far as cognitive learning is concerned, studies in child development have shown that at about the age of 5 or 6 a great ad-

vance occurs in the child's capacity to deal with cognitive experiences in an organized way. These facts justify the academic side of school life.

However, education of children also includes experience of social living. School has an important role to play in unifying the diverse elements of the child's experience. One important feature of modern urban, industrial life is the sharp separation of the place of work from the home. This may lead the child to reflect in his attitude toward going to school his parents' attitude that going to work is something to be endured in order that emotional satisfactions may be gained at home and in one's spare time. Thus going to school may be divorced, in the child's mind, from the real business of life which, he may feel, is the gaining of emotional satisfaction in the home—a divorce with most unfortunate consequences to the child's future attitudes. This tendency may be most extreme in a child whose mother has gone out to work since his earliest recollection. Such a child may conceive of work, and thus later, of school, as something in the nature of a deprivation, an infringement of just rights, an intolerable encroachment upon instinctual necessities.

The future inevitably will present constantly and rapidly changing social conditions. Anthropologists suggest that the best way in which to create a culture that can adapt successfully to change is to ensure that children adapt *early* to the exigencies of life in a group of their own age. In a well-run school a child can become accustomed to a rapid change of social climate while still enjoying the security of group membership and, ultimately, of control by well-disposed adults.

Many features of modern town life make it difficult for a child to acquire the necessary social experience for easy adaptation to school. As Dr. Creak has pointed out, many parents deny their children the opportunity to play in the streets, where they might learn the rudiments of social living in a group of contemporaries, because our streets are neither safe nor desirable as playgrounds. For the child to be left by himself on the balcony of an upper story flat, is for him to be left alone. This aloneness makes for clinging and demanding behavior; or else withdrawal into the self; or aimless and destructive play that may have explosive results in a flat full of hire-purchase furniture. In families with one or two children, the child's world, as such, does not exist; the child must compete for a place in the adults' world, with resulting behavior that parents may not understand and needs that they may fail to satisfy. This adult world will stimulate the child at an age when he still has incomplete control of his feelings and when he very likely has inadequate space in which to try out his new found discoveries.

PARENTAL DIFFICULTIES

Space limitations do not permit me to go exhaustively into the various forms of parental difficulty that may make for trouble in the family at the time of school entry. The most common is presented by the parent, more often the mother, who brings up her child as an extension, as it were, of her own personality. Throughout the character-forming period of her child's early years, such a mother will have trouble helping the child to acquire a measure of independence from her, to modify for himself his own instinctual drives and to control for himself his own primitive wishes. This kind of parental difficulty may result in the child's exhibiting one of the three danger signals already mentioned.

Another form of difficulty is presented by the mother who is able to deal well enough with her infant or toddling child to give him a sound basic relationship and security, but who, when the time comes to introduce him to wider relationships, cannot bear to let him go; or who, having by this time a younger child as well, maintains a toddler regime for both children. Though this mother may experience no marked or obvious difficulty in bringing up her children, other than a certain tendency toward babyishness in them; she may, in fact, sabotage their independence to such a degree that when they reach school age they will interpret in their behavior her real, if also unconscious, need for them to show themselves still to be dependent babies, still unable to tolerate the separation from her that going to school entails.

The most common sign of prolonged mother-child interdependence in my country, I believe, can be found in the child who goes to school with little or no

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1. Grayzel, H. G., Heimer, C. B., and Grayzel, R. W.: New York St. J. M. 53:2233, 1953.
2. Heimer, C. B., Grayzel, H. G., and Kramer, B.: Archives of Pediatrics 68:382, 1951.
3. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.
4. Turell, R.: New York St. J. M. 50:2282, 1950.

demur but who will not take his dinner there. By refusing dinner the child interprets faithfully his mother's deep jealousy of anyone else's attempting to provide for her child. Acute refusal to go to school a few weeks after starting, and intense misery prolonged over a period of months, at least for the first few minutes of each morning and afternoon, are also symptoms commonly due to this or a similar cause. Almost every influence that such a mother brings to bear upon her frightened or protesting child tends to increase his dependence and decrease his ability to succeed.

However, we ought not to forget that the child who is forced by a neurotic or immature mother to act out her emotional conflicts for her, may not be in any very desperate straits if his basic relationships and processes of instinct modification are satisfactory. For, at the school there will be adults whom he can love without feeling a compulsion to attempt to possess completely; and whom he can hate too, at times, without feeling unbearably guilty about doing so. The other children will not be in fierce competition with him for the exclusive possession of the adults. In contrast to the emotional atmosphere of his own home, the atmosphere at school may be relaxed, easy and conducive to confidence. The child's exploration of the concrete material of learning will become the basis of later exploration of the world of ideas; his entry into the group life of school will be no longer playing at life, but will be living in play—the basis for his later full entry into the social life of human society.

IN CONCLUSION

As in the case of so many other problems in the field of mental health, difficulties in school adjustment commonly have their origin in early childhood. Consequently the capacity of the social institution concerned — in this instance the school — to deal with the difficulties of children in adjusting to it is strictly limited. Of course, a great deal of planning is required to make school entry as easy and appropriate and congenial to the children as possible. The premises should be attractive and well designed; the school regime and style as well suited as possible to the physical and mental needs of the children. Above all, teachers should have sound motivation and reasonable emotional maturity themselves.

School can prove of great use in helping the child with sound basic relationships but inadequate social experience after early infancy to adjust and find delights in community life. But school of itself is not well placed to deal with the deeper maladjustments and developmental failures of early infancy. These need to be tackled by agencies allied to, but other than, the school itself. If the child is below the threshold of personal emotional and social development needed for adjusting to school, it will do little good to expect the school to act as what Dr. Creak has called "a weaning factory to deal with the clinging child."[3]

The child who is not yet weaned psychologically cannot be helped to get over his difficulties by the school acting alone. Without others taking measures, too, he will probably continue to show difficulties for years, if not for the whole of his life. Such a child needs helping on a broad basis of mental hygiene work, that takes into its wide sweep of consideration such matters as the mental health of the parents, their emotional maturity and the style of life which is being lived by the family.

In other words, the problem of school adjustment is not an isolated subject, but is one of many aspects of the complex social life in our modern urban, industrialized communities. I need to make no apology for having arrived at the conclusion that problems of school entry, like most other problems of children in the field of mental health, can only be fully and satisfactorily dealt with by a wide program of preventive mental hygiene embracing family life, social organizations, the teachers, and the parents, as well as the child himself or herself, for this is the way of the mental health world.

References

1. Mead, Margaret: The concept of mental health and its international implications. Paper presented at the ninth annual meeting of the World Federation for Mental Health, 1956.
2. Oral communication to the Ministry of Education Committee on the Treatment of the Maladjusted Child in the Education Service.
3. Proceedings of the Annual Conference of the Royal Society for the Promotion of Health, 1956. Mental Health Section.

Research needs in the delinquency field*

Fritz Redl, Ph.D.†

People often charge large government research agencies with being clogged with redtape, overcautiousness, and traditionalism, and give the credit for courage in pioneering to the small, informal community project.

This simply does not jibe with the tradition of pioneering in disease entities which is a part of U. S. Public Health Service history.

The trouble I have is not with creating an urge in people in government to pioneer but with convincing the general community that research in the field of delinquency is as important, broad and complex as research in any of the basic sciences.

Another major problem is to counteract the tendency to look to research as a panacea. Too often the cry for more research in juvenile delinquency, an obviously legitimate demand, is found on closer investigation to stem from a vain hope that the development of a small project here or there can substitute for needed action and guarantee a final solution of the problems we face.

FLIGHT FROM ACTION

The illusionary character of this outcry is apparent whenever a group of citizens demand increased research in delinquency and in the same breath ask that funds for service be cut.

Several hundred million dollars could be spent right now without wasting a penny of the money, for what we already know needs to be done. Nobody has to wait for further research to begin filling in the large gaps in our incredibly inadequate resources.

In every community there are hordes of youngsters whose problems are not new to us. Nor are the kids. They are known to dozens of welfare, counseling, service agencies; to courts, probation officers, teachers, neighborhood organizers. Thick folders of case history material lodged in numerous green filing cabinets tell their stories. Many of these children have had rather thorough "work-ups" with psychologists, social workers, psychiatrists, physicians and so forth. Our trouble in dealing with them is not that we do not know what they need. It is that, too flabby to support already existing facilities and to create new, improved ones, we do not cope with the terrific load of long-accumulated need.

Research suggestions which have their source in a flight from action can easily be distinguished from the genuine. They usually are poorly designed and do not receive solid, long-range financial and other support. To begin with, they are meant to last only as long as the dangerously aroused community interest in "doing something." Once the wave of public excitement is over, such research can be easily forgotten, discontinued, or written up for somebody's file.

ESCAPE INTO THE IBM MACHINE

When a community suddenly turns its spotlight on its problems with youth, we researchers are in a tough spot, too.

The layman suddenly pounces on us and gleefully asks us the embarrassing question:

"Now, look here, the youth of our Nation is going to the dogs. Just what are you guys doing about it? How about leaving your wise theories for a minute and giving us the answers, for a change?"

Research in this area has been neglected or nonexistent for years. The sudden discovery of its potential contribution hits with a heavy blow. No wonder the research specialist looks for an easy way out.

Most of the research specialists—for more reasons than could be listed here—have been busy with something else; not with the juvenile crooks, under-aged gangsters, and child schizophrenics for whom they are suddenly supposed to find a solution.

In fact, many of the most prominent contributors to the methodology of research have rarely spent much time with

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†Chief, Child Research Branch, National Institute of Mental Health, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

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either normal or pathological teen-age hoodlums. They haven't sat in a school room in a slum area for many years; haven't had to squelch a riot in a model community youth center.

They know little of what it feels like to be a well-meaning house matron in a detention home that was built for 48 children, houses 104, and has neither space nor staff to do even the most basic things—a house matron who is supposed to survive without punitiveness toward a bunch of bored, restless, and, to varying degrees, sick recalcitrants.

So, the layman's embarrassing question catches the research specialist with his complacency down. Expected to give an answer to something he has not been asked about for a long time, he scurries for security to the things with which he is most familiar. And the public's demand for more knowledge about delinquent youth is met by fancy research designs based on the best of our scientific arithmetic. Getting busy at once, he starts counting.

We research specialists have all learned to count, and to look for "countables" all over the map. We ask ourselves if it would help if we knew how many kids living in what kind of apartments do damage with what kind of props and how often a year, or if we looked at the families who kicked these kids out and found a new "correlation" between "environment" and "crime."

I am not making light of the very important tools of statistical methods or quantitative studies. I am only bemoaning the fact that we use the best tools we have, when under duress, to hang on to the tools themselves rather than to ask what kind of insight needs most sorely to be gained.

The first question thus becomes:

"What could we use our research tools on?"

It should be:

"What do we need to know about youth in order to tackle delinquency?"

So we measure and weigh and come up with more Chi Squares if we happen to be statisticians. If "personality testing" is our main goal in life, we give another thousand Rorschachs or TAT's. Or we force a few delinquents to play with our guidance-clinic doll houses—originally enjoyed by the neurotic or phobic child.

All this is good. But the practitioner, who must make daily decisions about child life from his foxhole, has a few additional questions to ask, which will never be answered by this approach. How about listening to him for awhile?

THE CRY FOR PRACTICE-GEARED RESEARCH

The practitioner—by whom I mean all those who deal directly with delinquents (including teachers and parents)—has an old complaint.

He is ready to pay tribute to the long-range usefulness of our fancy formulations, terminology and curves. He politely admits the research expert probably produces a lot that is important.

His complaint is that the research expert does not answer the questions *he* asks.

And of course he is right.

On the other hand, the research expert has a complaint of his own. It is that the practitioners are asking him the wrong questions. The practitioners do not understand how complicated research is, and their demand for simple results, easily and preferably cheaply applied, is nonsense, he says.

And of course he is right.

Just as in other areas, there is a real place for basic research around delinquency. While seemingly far removed from the rough realities of daily life, basic research eventually produces more blessings than many of the seemingly practical suggestions of the common sense approach. Modern physics has certainly proved that there is more practical reality in some of the mathematical formulae of the theoretical physicist than the public might have expected before The Bomb was exploded. The same may be true in the social sciences.

The justice of the complaints of both the practitioner and the research expert does not rule out their working in partnership on some parts of the job. There are plenty of questions concerning practitioners in areas that right now are at a stage in which they could and should be tackled by basic research.

Assume that I am a probation officer, judge, or court worker, or that I am busy in a family service agency or child guidance clinic as a psychiatrist, psychologist, or caseworker.

Assume that I am a group worker planning a camp or club group for youngsters of high delinquency risk.

Or that I have to try to keep a bunch of restless eighth graders interested in staying in my school room.

Or that I am a parent worried about what I would have to do if Johnny started running with the wrong crowd.

What kinds of things would I need to know in order to answer the questions that arise, and how could the research people help me to know them?

In all of these instances practitioners would benefit from a much more precise description of what forms of behavior indicate a serious disturbance and what things youngsters of certain ages might be expected to do which are just part of their developmental phase and of nothing else.

SOME SUGGESTED PROJECTS

I recently compiled a list of 21 research projects which could be undertaken today, with equal fascination for the basic researcher and the practitioner. They will not answer all the practitioners' questions, but some of those questions should be answered by the concerted efforts of the practitioners themselves.

Research, however, could help with such areas as these:

Assessment of Treatment Needs.—Decisions whether a child should have a foster home, an institution, outpatient therapy, a psychiatrist, or something else are still made on the most amazingly mystical or at least non-explicit basis. Worse, scientific lingo is amply used to disguise the fact that actually value judgments or personal preferences for traditionally accepted or rebelliously preferred treatment methods usually govern referral, intake, and exclusions.

It is time that a scientific machinery of concepts is developed which can bring order and real prognostic acuity into the whole process of placements or referrals to therapy.

Behavioral Influence Techniques.—Psychiatry has been inclined to be so vocal about the importance of the relationship between people that the importance of just what people *do* to influence each other has been neglected. Even if Papa loves Mary and Johnny adores Mama, just what they all do to wheedle pocket money out of each other, or just what the old man does when Mary has a tantrum, also has a lot to do with the developing pathology.

In residential therapy with delinquents, the hygienic manipulation of surface behavior becomes especially important, but the advice-giving psychiatrist is usually hampered even in out-patient work. Organized research on the effects of all influence techniques is of the utmost urgency.

Are We Sure We Know Why They Can't Learn?—Severe learning disturbances, especially in the area of reading, are a frequent concomitant of all types of problems we get under the label of delinquency. The general approach to this is too glib and either-or; either remedial teaching ought to fix up the cognitive mess while the psychiatrist fusses with the souls, or it is impossible to help youngsters learn how to learn until their basic personality disorders are taken care of.

I have a hunch there is a lot more to it, and a wide range in between. Organized research is badly needed on the inter-locking of basic pathology with cognitive disturbances, on new methods for a frontal attack in some of these areas, and even on the whole question of what is basic to what.

Social Perception.—A few years ago in Detroit, we hired a bunch of boys to put on a "club meeting." They had a script and one boy acted out the role of the leader, and others, followers, and others disrupters in the "club meeting."

We also hired another bunch of boys to look in on this club meeting through a one-way screen and tell us what they saw.

Some of the observers saw the pecking order—how all the group was dependent on one boy. Others only saw a bunch of boys playing with a pop gun. They had no social perception of the factors involved in this group process.

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We have learned that some organized delinquents betray through their amazing manipulation of people an unusual amount of social perception. They have the kind of perception that a nightclub entertainer has to have. Their main trouble is that they make the wrong use of it. But some other youngsters simply do not know how to assess what goes on in a group and get into trouble on that account.

The studies on social perception now underway are only crude beginnings; and the general statistical studies of widely mixed perceptual issues are of no value to the practicing clinician. Investigations first need to be made into what it is relevant to study the perception of. For the treatment of children with delusional hostilities and other perceptual and conceptual distortions so frequent in the delinquent population, a concept of social perception with much higher proximity to clinical issues and group processes must be designed.

What Is Right With Them?—What does constitute *progress, improvement,* or partial or total *cure* in a therapeutic situation?

The difference between improvement that is therapeutically premature or even false and real improvement is theoretically clear, but standards for evaluation are not developed on any adequate scientific basis.

Even the very terminology and conceptual machinery needed to observe positive functioning is underdeveloped. Most people who observe a temper tantrum have no trouble describing what happens, but the observer who is confronted with a stretch of conflictless behavior in a patient usually slides back into evaluative generalities, ignoring the rich and complex processes which are making things go, and which are studied so carefully when the machinery breaks down.

An organized research attack on this is of great importance and reaches far beyond the psychiatric field.

Group Compositional Problems.—We already know that a treatment-negative climate is produced if we expose extremely shy youngsters to youngsters who need to act out their behavior problems with unusual violence. The result in such a situation is to increase the internal problems of the shy child, who may be either frightened, or lured into behavior foreign to himself, and who inevitably will have his guilt feelings intensified.

We also know that children who steal on a fantastic basis—for instance, the kid who swipes a picture of his counselor's boy friend and buries it in the sand—cannot survive in a group of organized delinquents. In the first place, organized delinquents have too good a personnel department to let in "psychos." And if the fantastic stealer gets into such a group, he will be mercilessly exploited, even though both kinds of youngsters are thieves.

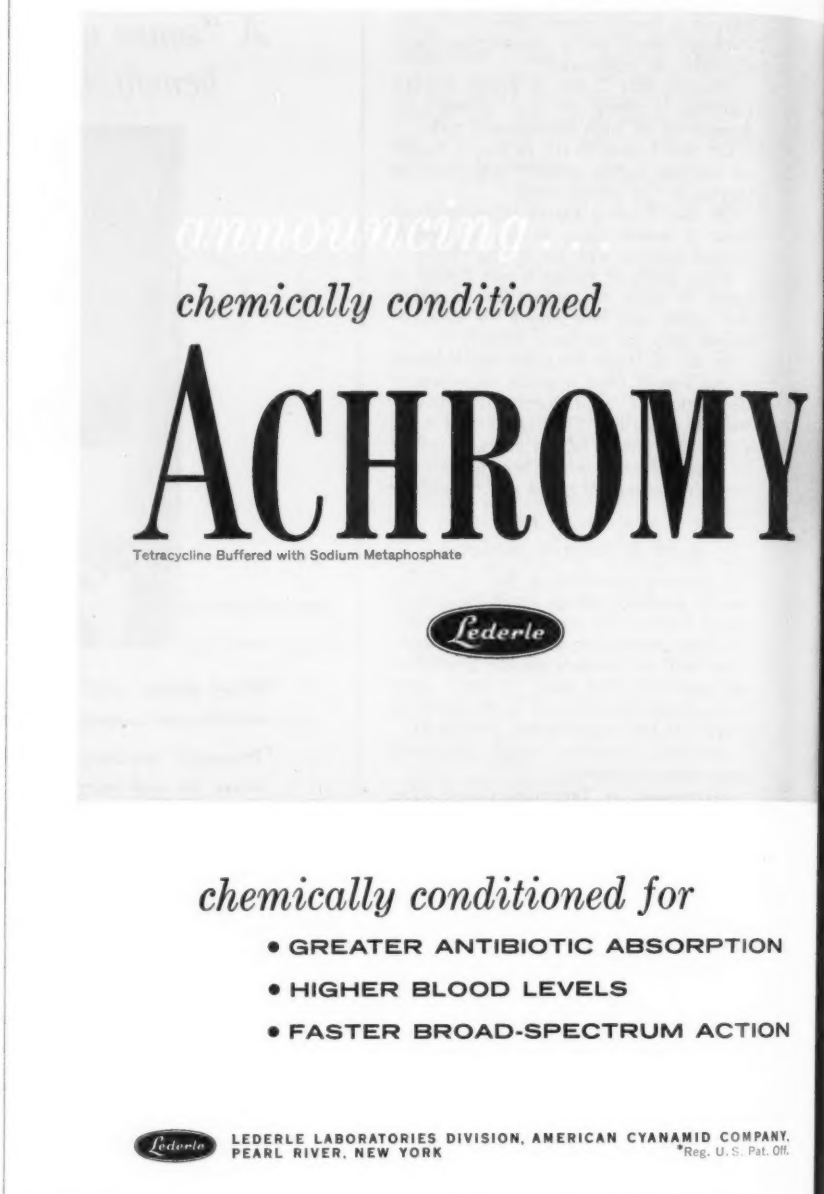
What we need to know, within extremes such as these, is which pathology gets in the way of treatment of other pathologies when treatment takes place in a group setting.

Is there a "law of optimum distance" within which it is safe to treat children with varying pathologies in groups? How do you measure this distance? What specific characteristics should we look for before a group is organized? How much do different styles of therapy, different settings, different group sizes, affect the problems of group composition?

Programing.—Some games have built-in safety devices which successfully handle the kinds of internal problems that the games produce. In Three Deep, for instance, the kid who moves outside the circle, and, while there, is chased by another kid, has the protection of the circle to return to when he has had enough.

But for some children, Three Deep builds up more excitement than can be contained in the game, and the results may be disastrous. In some other games, there is no built-in device against mounting anxiety.

Some games involve choosing sides, and most children can handle the temporary antagonism that being a part of one side, opposed to another, creates. But the very anxiety of being chosen, or not chosen, is too much for some children to bear. For others, too much hostility is



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created when one team fights another. For children such as these a different game structure needs to be selected.

In general recreation programs, we feed games to the kids and then pick up the pieces when the group-produced hostility, anxiety, or acting-out gets out of control. In the treatment of disturbed children, we must get beyond this. We need a psychiatric estimate of the potentials and danger spots of games and other activities used. Which games have what security devices to produce what results would be part of an organized pharmacopoeia of games. Indeed, this pharmacopoeia should include programming for anything children in group treatment do during a day or a night.

What people do with or to them, what props these people rely on, what vehicles they use to communicate with each other; all these things have real impact on the balance between impulses and controls both within the patient and the patient group.

PERSONNEL AND TRAINING

All these research projects have fairly obvious applications for the practitioner in his foxhole. Of equal validity, although of more long-range application, are two needed sets of answers in regard to personnel:

What Traits?—All the wonderful measuring instruments put together do not yet do the trick of testing for the specific traits that make for a good worker with disturbed children. In fact, we do not even know which brand of our own childhood neuroses predestined us to be especially good as a psychiatrist, a nurse, a group worker, or what not.

We do know that some people who work extremely well with very disturbed children very often have had a number of problems themselves, either internal or external, in growing up. Nevertheless, it would obviously be wrong to insist that people work best with unstable kids if they are unstable themselves. For there is a point beyond which one's own previous or present problems, rather than being a resource of experience to draw upon, get in our way and lure us into using the children as mops for our pathological needs.

Organized research into the question of trait syndromes and their relationship to specific professional performances in this field is still not developed. Good testing instruments for personnel selection cannot even be dreamed about without more knowledge along these lines.

Training—For What?—Any clinical specialist suddenly thrown into the job of consultant to an institution for delinquents may have had very adequate training so far as his own specialty goes. He may still find himself way out of his depth when he is suddenly expected to develop inservice training programs for the so called "auxiliary fields."

Yet is it *he* who is asked to tell the others what they ought to know. The temptation to feed to house-parents, group leaders, attendants, and others some watered-down versions of the concepts and knowledge that were considered an important part of his own training is as widespread as it is disastrous.

An organized study of the actual training needs of people who perform specific tasks in the lives of children is a prerequisite even for the training of those who are later to train others.

Thinking Straight About Delinquency.—Psychiatry has, for the most part, focused on the feelings, emotions and attitudes of people toward delinquency and delinquent children, figuring that little gain can be made by straight scientific knowledge unless those feelings, emotions, and attitudes can be changed.

When one is concerned with influencing larger parts of the population in the direction of wiser community planning for vulnerable children, one needs to know also what the current "thinking pattern" on the delinquency issues is of the public at large, as well as of parents, teachers, judges, and others who come in contact with them.

In order to know what facts and arguments would be convincing, organized public opinion studies need to be made, which are specific enough to tease out concrete patterns of faulty reasoning, special areas of fact blindness, and the like. Such studies are as important for those dealing with delinquency as are those in the field of physical disease for the public health educator.

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1. Dolkhart, R. E., Dentler, M. & Barrow, L. L., Ill. M. J. 90:286, 1946.
2. Adler, H. F., Atkinson, A. J., & Ivy, A. C., Am. J. Digest. Dis., 8:197, 1941.
3. Wozasek, D., & Stelgman, F., Am. J. Digest. Dis., 9:423, 1942.
4. Williams, R. D., & Olmsted, W. H., Ann. Int. Med., 10:717, 1936.
5. Lieberthal, M. M., Conn. State M. J., 19:86, 1955.

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IN SUMMARY

These are some of the research problems which I believe should claim our attention. Those I have listed are meant to be primarily related to issues for which the field of psychiatry has a strong affinity.

Many other equally important research issues, especially those of larger community impact not primarily psychiatrically geared, have not been touched on here for purely practical reasons.

It seems to me that the answers to any of these questions would be dear to the practitioner's heart. The answers will not come, however, merely from the practitioner's daily observations. They require a laborious detour through sheer basic research.

The chances of premature death*

The chance of surviving to the 65th birthday has been steadily increasing since the turn of the century. According to the mortality prevailing in our country around 1900, the chances that a newborn white male would attain age 65 were slightly under 40 per 100; for one born in 1954 they were 66 per 100. During this period, the chances of survival to age 65 for a newborn white female increased from 44 to 80 per 100.

Despite the extraordinary gains made in life conservation as a consequence of advances in environmental sanitation, the medical sciences, and in the general standard of living, premature death is still relatively frequent in our country. Even under the mortality conditions of 1954, one third of the newborn white males and one fifth of the white females will fail to reach age 65. Of the men who have attained age 45, at least one fourth can expect to die within 20 years; the proportion is about one sixth for the corresponding group of women.

Far outranking any other cause of death are the cardiovascular-renal diseases. The chances are more than 150 per 1,000 that a white male prior to midlife—that is, at birth or at ages 25 or 45—will succumb to these diseases before reaching age 65. It is also evident from statistics that of all the men at age 25, for example, who will die before reaching age 65, more than half will die from the cardiovascular-renal diseases. The arteriosclerotic heart diseases (mainly coronary artery disease) account for the major proportion of such deaths.

The chances that a white male at any age up through 45 will die from cancer (malignant neoplasms) before he reaches his 65th birthday are a little over 50 per 1,000, or about one third as great as for the cardiovascular-renal diseases. Cancer thus accounts for approximately one-sixth of the total mortality among males before age 65. Cancer of the respiratory system alone is responsible for about 5 per cent of the total.

Reflecting the remarkable progress made in the control of the infectious diseases, pneumonia and influenza, and tuberculosis have become relatively minor causes of premature death. Currently, the chances are less than 6 per 1,000 that a newborn white boy will die from tuberculosis before reaching age 65. On the other hand, accidents continue to be a serious threat to life. The chances at birth that a male will lose his life in an accident prior to age 65 are 40 per 1,000, or over twice those for pneumonia and influenza, tuberculosis, and diabetes combined. Although the chances of accidental death decrease with advance in age, they are still 15 per 1,000 at age 45.

The chances of premature death are considerably less for females than for males. At birth, they are 343 and 205 per 1,000 respectively. The chances of dying from the cardiovascular-renal diseases before 65 are only about half as great for females as for males. Pneumonia and influenza, tuberculosis, and accidents also record markedly lower mortality among females. For cancer, the chances of dying before age 65 are not appreciably different for the two sexes, even though the figure for respiratory cancer alone is much higher for males. Diabetes is the one cause that shows a distinctly higher mortality for females than for males.

It is apparent that further reductions in the toll of premature death will depend largely upon the success of the

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, October 1956.

intensive efforts being made to control the cardiovascular-renal diseases, cancer, and accidents. Research on the diseases of the cardiovascular system is being aided by grants from the Life Insurance Medical Research Fund, which in the 11 years since its organization has contributed more than $8 million for various investigations in this field.

Public health and the people's health*

Ernest M. Gruenberg, M.D., Dr.P.H.†

Public health is part of civilization's fight for a better life. With civilization comes an organized, conscious effort to change man's relation to his physical and social environment.

Civilization's fight against disease, specifically, seeks to cheat death for a brief space and to protect man from nonfatal diseases that produce illness. This is done by inventing specific ways of preventing disease. It is strengthened by a social movement to put these inventions to work on a broad scale. The specific public health movement, 100 years old, has created responsible armies of workers and organizations to see that existing inventions are applied and new inventions are made.

The three main forces affecting the level of a people's health are the natural hazards to survival and their distribution, the level of civilization, and the advance of public health.

The history of man's health, which still remains to be written, will describe what is known about the milleniums during which man was at the mercy of natural hazards with little understanding of what they were and with no effective means of acting against them.

The next great period will deal with advancing civilization and the increasing effect of technology on raising living standards and averting famines.

The past century accelerated the advance of public health. Simultaneous with the development of techniques for organized health campaigns, public health movements have become pandemic in Europe and North America. Knowledge has been increasing at a phenomenal rate, giving public health ever more powerful weapons. This new power will raise new responsibilities and require repeated self-examination regarding their nature.

In Ceylon, life expectancy at birth gained nearly a year per year for the 6 years beginning in 1947. A similar rapid rise in life expectancy occurred also in Japan and Puerto Rico while in some other areas, although more favorably situated, populations have not shown such dramatic changes.[1]

One implication of these phenomenal successes is that whereas public health formerly represented a late stage in technical development, working effectively to supplement industrialization and to mitigate the harmful consequences of urbanization, new knowledge has made it so powerful that it can precede other forms of social progress.

Another implication is that, while advances in health have often served to assist the process of social development, public health never before had the power to create radically new patterns of disease and mortality, relatively unassisted by general rises in the level of living.

In some places health protection and promotion have become the chief instruments for producing rises in the level of living and in releasing uncounted millions of lives for productive labor.

To the epidemiologist this means that the distribution of organized health movements has become the chief factor in understanding the distribution of many

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†Dr. Gruenberg, a member of the technical staff of the Milbank Memorial Fund, New York City, was executive director of the New York State Mental Health Commission from 1949 to 1954. A full version of this paper, here somewhat abridged, was delivered May 2, 1956, in Columbus, Ohio, at the joint meeting of the Middle States Public Health Association and the Ohio Public Health Association. States in the former group are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

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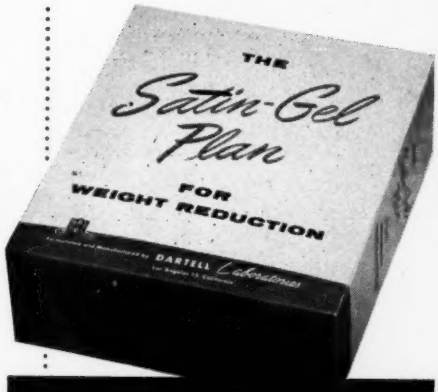

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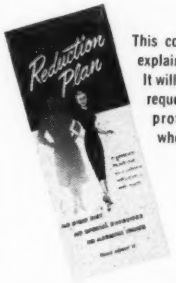

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diseases and the pattern of human mortality.

CHARTING THE FUTURE

These and other signs of the power of organized public health are so much on our minds, and respect for its power to effect changes in the people's health is so widespread, that the whole movement seems to be circling in a moderately dazed way in an attempt to find suitable targets on which to strike.

There are dangers in this situation. An example is the mental health movement which, since the war, has come into its own. Although to the administrator popularity may be a matter of envy, to the serious worker it soon becomes a matter of concern.

There is a danger that we come to believe that such popularity must be deserved.

There is a danger that we come to believe our enthusiastic supporters when they claim that we are capable of anything.

There is a danger that we allow ourselves to be held responsible for things we cannot do.

In a time when our power has increased we must remember our duty to inform the public of the sober realities of their health situation. Public health workers have always been long on faith and enthusiasm and at times short on facts and self-criticism. With the powerful weapons that are now available and the widespread faith and enthusiasm that are evident, the movement needs to strengthen its balance wheel of facts and self-criticism.

The suggestion that the next great chapter in public health should be centered on positive health and medical care can be misleading.

Medical care has become a powerful tool for reducing disability and postponing death in the presence of certain diseases. Furthermore, everyone has the right to expect the best available medical care when he is ill.

But, from the public health point of view, every case that comes to medical care represents a failure of a movement whose objective is to keep illness from occurring. Obviously, physicians in this country keep very busy in spite of preventive medicine's great successes. Public health will not be doing its job unless it tackles the causes of morbidity and mortality which still plague the people.

ATTACKING PREVENTABLE DISEASES

First, we must do what we know how to do. There are some vital gaps in civilization's battle against disease.

We have not found practical ways of preventing all preventable diseases, diseases for which the technical means of prevention are well established. The great progress on which we compliment ourselves has affected a pitifully small percentage of the world's population. Malaria alone, a completely preventable disease, is still a great killer.

It is not only abroad that these gaps are to be found. Malnutrition, tuberculosis, venereal disease, excess infant and maternal mortality, and inadequate medical care and rehabilitation are often found in the United States in particular neighborhoods and sections of the population. Infant mortality in New York City, for example, is as high as 35 per 1,000 live births in 4 districts and as low as 17 in some districts of the city.[2]

Retarded populations in this country suffer not only from poor health but also from poverty or ignorance. If public health is going to continue to work for the improvement of the people's health, it will concentrate on these populations.

One useful approach is the examination of patterns of differential mortality rates. Although we are working toward consistency and constancy in statistics on occupation and mortality, England has issued tabulations of mortality by social classes for several generations. While we have failed, perhaps, to be impressed by the fact that the standardized mortality ratio for the least favored populations in England and Wales is twice as high as for the most favored, we should be impressed by the fact that age-specific death rates for adult males are higher for each comparable age group in this country than in England. And we should be even more impressed by the fact that standardized mortality ratios vary more by occupational groups in this country than in England.[3]

This is not the place to recommend solutions. It is important to recognize that these problems exist and that the measures available point unmistakably to un-

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finished business for public health.

Some of the specific areas for attention which might lead to a reduction of some of these differentials are well known. To list a few:

- Nutrition is not optimal for the entire population.
- Housing is not sanitary or safe for all.
- Fluoridated water is not yet available to most urban families.
- Medical care is not readily available to those who need it most. In particular, the aged frequently cannot afford the high costs of medical and nursing care. Often they do not receive the detailed attention that medical science can offer to preserve remaining functions.

Dr. Haven Emerson once propounded the theorem that the first step in public health occurred when man rose up out of his own filth. Although mankind has long since passed that early stage, it now finds itself surrounded by man's collective filth in air and water. The present movement to rid rivers, coasts, and city air of man-made pollution has scored some signal successes on a few small fronts. The staggering proportions of the problem and its implications for civilized life illustrate the old proposition that public health cannot "go it alone" but must act as a center of technical and community leadership for all the forces interested in the people's health and welfare.

USING KNOWLEDGE FULLY

There are also some new frontiers for public health. Four major health problems—mental diseases, arteriosclerosis, cancer, and the common cold—serve to remind us that there are still diseases we do not know how to control and that there are some public health objectives we would like to reach but do not know how.

A proper humility before the forces of nature obliges us to recognize that we are powerless to prevent these conditions in the mass and that medical science can do little to change the course of most of these diseases once they are started on their way.

Our first obligation as professional health workers is to know the facts. Our second is to communicate them intelligibly to the people we serve. Our third is to devise and execute schemes to put the limited knowledge we do have to effective use.

For example, though many prevention programs have been instituted in the mental diseases, most have ignored established knowledge.

In one State the mental health program is centered on human relations in the health department and in the schools. Some cases of pellagra psychosis occur each year, but the program does not consider control of these preventable cases to be its function. Nor does it concern itself with the preventable cases of neonatal brain hemorrhage caused by Rh incompatibility. Available knowledge strongly suggests that young infants and preschool children require stable family life for healthy personality development, but the program does not seek to prevent preschool children from being housed and fed in institutions or in a series of foster homes.

It would seem that the first item on any public health program must be the elimination of preventable instances of morbidity and mortality. But the bulk of mental illness today cannot be prevented by known techniques.

Can we shorten the duration of some mental cases? There is some reason for hope in this direction. Acute depressions in the involutional years are sensitive to shock treatments. Some neuroses of childhood seem to be relieved by quick responses by the adults in the child's environment. Mental deficiency is partly treatable.

Can we reduce the disability which mental illness produces? In many instances, yes. We know that we overhospitalize mental illnesses in a wanton fashion. We know that with good medical care many chronically ill people can live slightly impaired lives instead of hospitalized lives.

Programs which emphasize positive mental health often distract attention from the pluses and minuses in our knowledge. Mental health programs emphasize child guidance clinics, but the clinics generally prefer to see chronic neuroses rather than to try to see an acute neurosis while it is acute or to help a neglected infant. Programs emphasize building more hospitals when the use of mental hospitals has become ex-

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cessive. Psychiatrists are trained to treat the least ill rather than the chronically ill whose disability they could often reduce. Education programs are called preventive even when there is no real reason for believing they have any important effects.

AVOIDING ILLUSIONS

Parent education is necessary within reason, and child guidance clinics, adult psychiatric clinics, mental hospitals, psychotherapy for neuroses are both necessary and valuable. Perhaps the emphasis on these activities in existing mental health programs comes from an illusory kind of thinking. Some of these illusions have become our standard ways of avoiding unpleasant realities. To describe a few:

"Where there is a will, there is a way." This is true about carrying out an activity, but it is not true about achieving an objective. You may shout across the ocean with great will, but without a radio you will not be heard. You may educate parents with gusto, but you cannot be sure you have prevented any mental disease.

"Early diagnosis and treatment is secondary prevention because it shortens disease or reduces disability." This is a simple inversion of the true proposition that secondary prevention consists of early diagnosis and effective treatment. Ineffective treatment doesn't help arteriosclerosis. There is no real reason to think that early diagnosis and treatment can reduce morbidity or mortality in this disease.

"Activity is good." It isn't always.

"If one clinic doesn't help, get two." If one super anticold pill doesn't stop your cold, take two. If two don't help, take three.

"Doctrine of signs and names." This illusion consists of the belief that the name of an agency describes its effects. To stop the common cold, set up an anticold commission and give it the assignment of stopping colds. If the incidence of colds goes up the first year, enlarge the agency the second. After staff has obtained tenure and the rates are still rising, have a shakeup, change the name, and bring in a director who has impressive qualifications. The chances are that you will get a competent staff who think the common cold is a bad thing, who will probably find ways of reducing the amount of headaches and coryza, who may produce some skin-tanned children by lighting classrooms with ultraviolet lights, and who will increase the sale of nasal paper tissues, and decrease the sale of pocket handkerchiefs. They will keep busy and do some useful things, but they probably won't have much effect on the number of people who suffer from the common cold.

The reason is obvious: They don't have the knowledge; they don't have the techniques. In spite of good scientific training in tailoring means to fit ends and in learning to recognize facts as facts, the best intentioned of us get carried away by the desire to effect changes, to slay the wicked dragons. When ignorance or difficulties frustrate, we switch goals and develop formulas for self-justification.

These are some of the current thoughts of one mental health worker regarding the future of public health. The objective of public health work is to control disease. The value of public health activity depends entirely on its success in achieving that objective. As techniques become more powerful and as health organizations become larger, the responsibility for keeping track of our successes and failures becomes greater.

The successes of the past can guide us, but the successes of the future will be even greater and will demand as much originality and steadfastness from public health workers.

The people's health is becoming increasingly more subject to the control of public health, but the people's health still manages to vary in ways which public health has not yet been able to control.

References

1. Stolnitz, G. J.: Comparison between some recent mortality trends in underdeveloped areas and historical trends in the West. *In* Trends and differentials in mortality. New York, Milbank Memorial Fund, 1956, pp. 26-34.

2. New York City Health Department: Summary of vital statistics, 1955. New York City, The Department, 1956.

3. Moriyama, I. M., and Guralnick, L.: Occupational and social class differences in mortality. *In* Trends and differentials in mortality. New York, Milbank Memorial Fund, 1956, pp. 61-73.

Changes in nervous system with age*

Harry H. Wilcox, Ph.D†

The nervous system is unique and its basic cellular structure is very highly specialized and diversified. The individual nerve cells in one small circumscribed area or nucleus may be markedly different in structure, action, and reaction from those neurons that form an adjacent group. These neurons, even with their many unsolved problems, are far better known anatomically and physiologically than the greater bulk of the nervous system, their supportive structures. These structures, including the glia and the ground substance, are within the bounds of the existing frontiers of neuroanatomy and neurophysiology. So much of the normal picture of the nervous system is so scantily known that departures from the normal are at best determined with difficulty.

A host of neuroanatomical alterations in the nervous system accompanying the process of aging have been described. Many of these so-called manifestations of aging occur in the very young as well as in the old. Some of these, when they occur in the young are undoubtedly abnormal, whereas the frequency with which they occur in the old might cause them to be labeled as normal alterations accompanying aging. Aging should be looked upon primarily as a physiological stage and not a pathological condition. The normal alterations that bring about or occur with the gradual and continual advance from one plateau of life to another are apt to be quite subtle. They therefore are difficult to determine or locate accurately, and difficult to separate from abnormal changes brought about by modifications in internal or external environmental conditions as influenced by disease or trauma. The separation of these changes from artifacts or postmortem changes, often uncontrollable in human material, cannot be overemphasized.

In human peripheral nerves it has been shown that there is an increase in connective tissue and a reduction in the patency of the blood vessels.[1,2] This begins in the fourth decade of life as an endothelial proliferation and hyalinization of the vessels with an increase in the endoperineurium invading and apparently replacing areas of the nerve bundles by connective tissue elements. With this gradual reduction in blood supply and increase in connective tissue, there seems to be a gradual alteration and reduction of the nerve fibers, especially the larger ones. These findings parallel the measurements of the conduction velocity in human nerves[3] which indicate that, beginning in the fifth decade of life, there is a slight but continual decrease in conduction velocity. Again the responsibility may be placed on a decreased vascular supply due to a local ischemia and changes in permeability of the vessels accompanying metabolic depression.

The conduction velocity of peripheral nerves in the rat[4] markedly increases during development, with a leveling off at maturity. In contrast to findings of the human studies, little change in conduction velocity was noted in rats after maturity was reached.

Counts of fibers in the dorsal and ventral roots of the eighth and ninth thoracic levels, as well as cell counts of those dorsal root ganglia, taken from human cadaveric material,[5,6] indicate a marked decrease in both number of myelinated fibers and cells after the fifth decade of life. However, in view of the rather wide range of variation within the relatively small groups of similar ages in these studies and the degree of overlap between groups, additional studies of this type are needed to substantiate the existing evidence.

Certainly, if in the normal course of aging, the metabolic activities of peripheral nerves are so disturbed as to produce a marked numerical decrease in the components, the effect on the normal course of the procesess of degeneration and regeneration might be quite marked. One study of the effect of age on wal-

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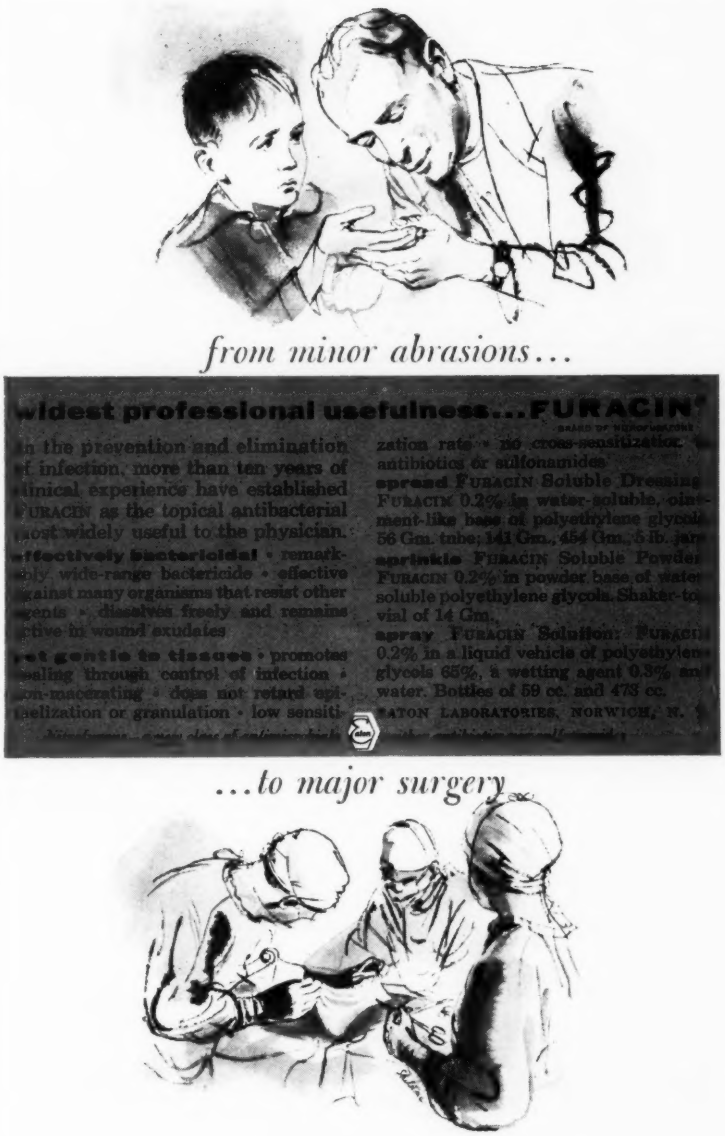

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lerian degeneration in the rat was carried out on fairly young animals.[7] In this study it was demonstrated that in young animals there was a more rapid cellular proliferation and a less rapid loss of myelin than in older animals (160 days of age). Another report[8] demonstrates that in older animals more general and extentive signs of retrograde degeneration were present than in young animals, with a striking increase in the number of macrophages present in the sectioned dorsal roots of the older animals, but with a slower rate of removal of debris. This might be due to a lower metabolic rate, although it is not entirely in keeping with the findings of a comparable nerve fiber regrowth rate as evidenced by similar numbers of regenerating axons distal to the anastomosis. In the older animals, there was a diminution in the number of fibers successfully crossing the scar and in the rate of growth beyond. The proliferation of capillaries in the anastomosed roots of the senile rats was quite impressive.

GANGLIAL DEGENERATION

Cells of the dorsal root ganglia and the gasserian ganglion in the human, as well as in cats and rats,[9,10] undergo a fatty degeneration which consists of a clumping of the Nissl substance, a subsequent destruction of the neurofibrillar reticulum, and a coalescence of the vacuoles. The cell becomes quite foamy and swollen and finally is destroyed, leaving behind only cellular debris. Although cell counts made on this material indicated no marked difference between young and old individuals, the numbers were relatively small, and statistical measures could not be applied to test the data. Atypical cells, such as the frayed cells of Cajal, fenestrated cells, cells with end bulbs, and so on, seemed to occur commonly in these ganglia at all ages.

Degenerate changes in occasional cells with a moderate degree of neuronophagia have been reported in human autonomic ganglia, with an increase of the interstitial tissue of the ganglia,[11] as well as variations in the chromidial substance, shrinkage, hyalin degeneration, hydropic alterations, pigmentation, nuclear displacement, vacuolization, and partial or complete destruction of the cell.[12] While in dogs, many of these variations seem to be related to aging, there was some question about the correlation in man. Even pigmentation was questionable since in man apparently many factors contribute to deposition of pigment.

A subsequent study of this pigment[13] found it to be a lipofuscin type closely related to ceroids and not to melanin. It seems to be one of three materials present in the nerve cells that are periodic-acid Schiff positive. The other two are glycogen, which is found in dogs of all ages, and a mucoprotein. Lipofuscin was not found in dogs less than 10 years of age, while in man it was present in varying amounts at all ages from 7 to 92 years. The mucoprotein is limited to nerve cells of the peripheral nervous system and is present to a greater degree in the autonomic cells. It is present in all nerve cells in a granular form in both senile and young dogs but is not concentrated enough in the young animals to be demonstrated by the periodic-acid Schiff method.[14] Lipofuscin has a much wider distribution and seems to be more concentrated in the efferent nerve cells.

The pigment of the autonomic ganglion cells has been considered[15] to be, or to contain, a hormone or a similar substance which represents part of the neurosecretion of the nervous system. The origin of the pigment from the Golgi apparatus has been suggested.

The variability of the Nissl pattern and of the number of cells in the chain ganglia of similar size has been shown in the rat[16] and in the guinea pig.[17] The series of animals used in these studies did not, unfortunately, include senile forms, but the series from fetal to mature stages form bases for further investigation.

No data on the effect of age on the regenerative capacity of the fibers of the autonomic nervous system exists. It would be most interesting to follow this process in senile forms.

CENTRAL NERVOUS SYSTEM CHANGES

Changes similar to those described in the ganglion cells are reported in the various areas of the central nervous system. In the spinal cord,[18] the general histological structure begins to alter after 30 years of age, and by 60 years the changes are quite marked. Vascular alterations, gliosis, and demyelination, especially in the fasciculus gracilis, pigmentation of cells, and formation of corpora amylacea were among the findings. Pyk-

nosis and chromatolysis in the cells of the ventral horn did not occur frequently and certainly were in no instance pronounced enough to be significant.

Pigmentation was such a constant finding in individuals in the fifth decade of life and older that it was felt that if pigment atrophy is considered an abnormality one could scarcely find a normal spinal cord after the age of 40 and, by the seventh and eighth decades, hardly a normal ganglion cell could be found. In some cells the change was so severe that the cell appeared as a pyknotic pigment spot. Corpora amylacea were not reported in spinal cords of persons less than 30 years of age; after the fourth decade it was a frequent occurrence, especially around the entrance of the dorsal roots.

CHANGES IN THE BRAIN

Several studies indicate that the gross weight of the brain decreases with age. One of these,[19] a study of 2,060 brains of white males whose ages ranged from 12 to 96 years, reported that there was a gradual increase in the weight of the brain up to 30-34 years of age, and then a gradual, uniform decrease takes place. The maximum decrease occurring between the 3d and 10th decades of life was approximately 11 percent. Accurate determination of the weight of the brain is quite difficult. It has been pointed out[20] that simple severance of the brain, the treatment of the meninges, and the removal of the cerebrospinal fluid are rather variable factors.[20] These sources of error can be minimized if one individual removes and handles the brains; otherwise, those variables must be considered in analyzing samples.

The brain size has been said to fluctuate inversely with economic level.[21] Since most of the brains obtained in routine autopsy in hospitals come from persons of the lower social strata, they may not be too representative of a cross section of the total population.

The reported decrease in brain weight does not seem to be due entirely to a difference in water content. There are studies that report a definite decrease in water content in the brain throughout the entire life span.[22,23] This decrease varies somewhat with different species since there seems to be a remarkable correlation between physical and mental development at the time of birth and subsequent water loss. One report on senile human brains differs from the others in that it states that there is an increase in the water content in senile brains.[24] There seems, however, to be universal agreement on the higher water content of the cortex and the lower water content of the medulla, which has suggested that the phyletically newer parts of the brain are wetter.

Phyletically different brain areas also seem to show the differences in the cholinesterase activity.[25] In rabbits, the medulla reached its maximum activity at 15 days and then fell 50 percent by 2½ months of age. The activity remained fairly stable after that time. In the frontal cortex and caudate nucleus, the maximum activity was reached at 18 months and then held steady. However, no general conclusions as to the correlation of the cholinesterase activity have as yet been made with senility.

Young and adult rats differ in that the adult brain contains more fat and phosphorus. In extreme age there are small decreases in fat, acid soluble phosphorus, and potassium, with an increase in sodium.[23]

The cerebral physiology of the human has been studied by the nitrous oxide method to show that there is a close correlation between advancing age and decreasing blood flow with a concomitant decrease in oxygen consumption.[26,27] This decrease in oxygen availability and consumption may be closely related to neuronal activity. There seems to be almost universal agreement that, with increase in age, there is a marked decrease in the number of neuronal elements in the brain. However, most of the observations and cell counts upon which this conclusion is based have been made on relatively small series of human brains, even on a single specimen and with known mental deterioration frequently clouding the issue. Counts on large series of experimental animals are likewise scarce.

A recent report shows a decrease in the number of cortical neurons with increasing age, especially in the superior temporal gyrus and the lower quarter of the precentral gyrus.[28] Unfortunately, this study is based on a very small sampling of a remarkably variable population. Variability is immediately apparent when one examines the raw data presented by the various investigators.

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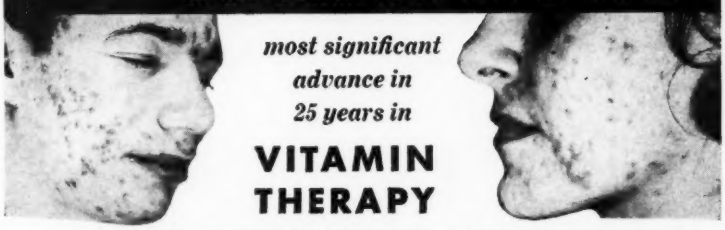

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References: (1) S. M. Bluefarb, M.D., "The Management of Acne Vulgaris in the 12 to 17 Year Age Group," Postgraduate Med., 19:144, Feb. 1956.
(2) S. W. Becker & M. E. Obermayer, Mod. Dermatology & Syphilology, 2nd edition.

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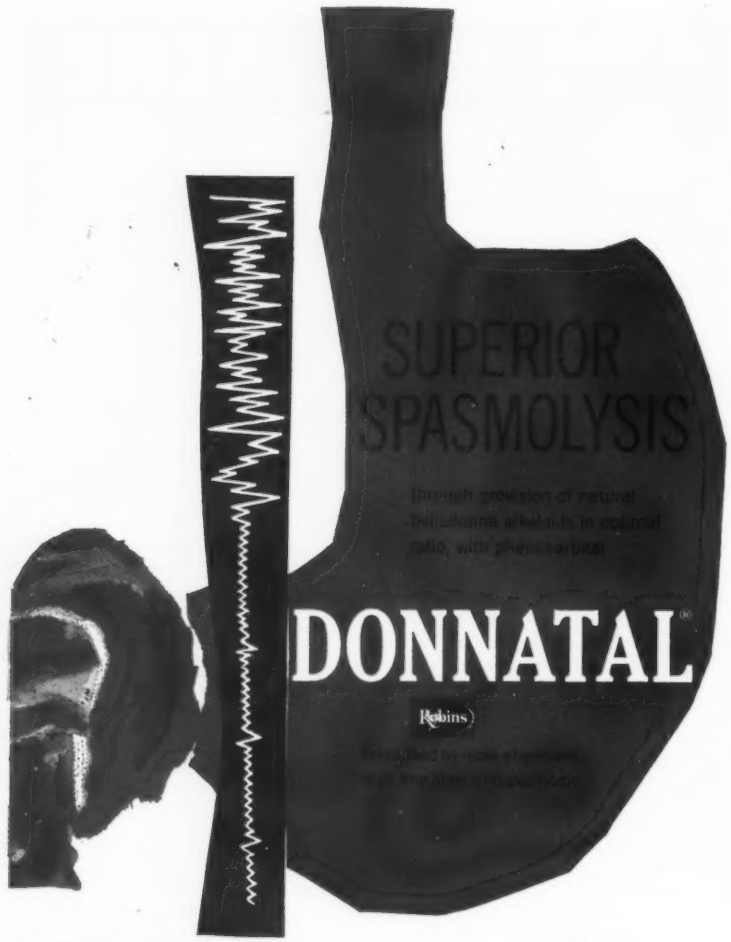

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Only by the use of large samples, which in studies of this kind are most difficult to procure and study, can this source of error be overcome. It is indeed reasonable to believe that, in a cell which has lost its ability to reproduce and which functions more or less constantly over the years, physiological and anatomical deterioration can readily occur either as a perfectly normal process or as a consequence of some external or internal environmental disturbance. Therefore, not only is the mass of evidence—even though still circumstantial and not entirely conclusive—in favor of the decrease in cell numbers with age, but it seems logical to expect it. I merely point out here that there is still a great need for quantitative studies on the brains of humans and experimental animals, quantitative studies that consider variables and try to control them. Proof for one species cannot necessarily be had from studies on another, since it appears more and more that there is a marked difference in the aging of the nervous system in different species.

PURKINJE CELLS

The population of the Purkinje cells is reported to suffer severely with advancing age. In a description of the Purkinje cells of a 92-year-old man, it was stated the cells "appear considerably shrunken, both nucleus and protoplasm, though not more so than normal daily fatigue".[20] This individual was in a coma and endured 6 days of inanition prior to death. The Purkinje cells were reported to be 25 percent fewer than in the cerebellum of a 47-year-old man. In another study of the cerebellums from 63 humans of both sexes, aged 12-92 years, 43 cerebellums were eliminated from consideration because they "showed the greatest losses," and "cell losses are frequently due to disease".[20]

Similar decreases in Purkinje cells in the dog, the macaque,[21] and the rat[22] are reported. Reducing the rat to the equivalent age of man, it was concluded that destruction of the cells or the processes leading to destruction take place 30 times as fast in the rat as in man.

A loss as high as 40 percent in the Purkinje cells of guinea pigs has been reported.[23] However, this figure is based on the number of cells in the newborn as 100 percent, and it is important to note that the highest percentage loss—66.7 percent—occurred in one animal of 193 days of age.[24] In one area of the cerebellum, 7 animals out of the 10 younger than the oldest (1,800 days) of this series showed more loss of Purkinje cells than did the oldest animal.

In my own series of guinea pigs, whose ages range from 139 to 2,765 days, I have been unable to measure quantitatively any loss of the Purkinje cells. On the contrary, the population seems to be quite stable, and certainly there are no discernible areas in which cells have degenerated and have been removed.

PIGMENTATION

Almost every conceivable cytological alteration has been described and associated with age changes.[25] These alterations are not restricted to any one part of the brain but seem to occur everywhere. Of these, "the most constant element indicating aging in nerve cells is lipofuscin, the lipochrome pigment. It rarely appears in younger subjects, but does appear beyond a certain age. . . . while we can get lipofuscin in some pathologic conditions, the truth is that we can get a great deal of this material in elderly persons. . . . this is the most important element shown in the cell and that other elements, such as variation in the neurofibrils, Golgi apparatus and, in some cases, the Nissl bodies will have a secondary place".[25]

The accumulation of pigment occurs at different time intervals in different regions. Certain nuclei are prone to early pigmentation; others fail to show pigment even in advanced age. It has been suggested that constantly activated cells are less prone to pigmentation, while those that undergo periods of rest or inactivity are more likely to become pigmented during the aging process.[26-28] In this connection, it is interesting to note that the accumulation of pigment in the nerve cells, as well as some of the other changes with age, are more marked in the human species than in other mammals.[23]

THE GLIA

The role of the glia in aging is undoubtedly a very important one, although, except for the phenomenon of satellitosis, with the concomitant process of neuro-

nophagia, little is known about these structures. Studies of satellitosis and neuronophagia of the cortical cells of the human[39] and of the horse[40] report definite, increasing occurrence with advancing age. In the rat and mouse, satellitosis was not nearly so marked.[41a] This process also occurs in the brains of young animals and humans, where it may be even more frequent than in the very old individuals.[41a] No marked qualitative change in glial cell types participating in this process has been reported.[41b]

ANTE-MORTEM AND POST-MORTEM CHANGES

In the human and in the experimental animal, it is at times extremely difficult to separate the changes which can occur in the cells of the brain before and after death. Post mortem artifacts are real stumbling blocks in neurohistological studies and should not be underestimated. I personally do not contend that nerve cells do not show signs of degeneration, die, and are removed by phagocytosis or lysis. However, I do feel that we must proceed as cautiously as possible in our interpretations of what is normal and what is abnormal in the aging brain.

C. Vogt and O. Vogt[30] point out that the time course and morphologic features of aging are different in each of the hundreds of different cell types, and that "the aging process or 'involution' of a cell is different from any regressive progress of 'degeneration' it may undergo, but degenerative processes may, of course, occur in combination with an involution. . . . The aging process always leads to the death of the cell. If it occurs at an average (normal) time, it causes partial death of the brain through normal death of the cell type in question. If a person lives sufficiently long, partial death of the vital cells of the medulla causes his or her death, as a normal phenomenon. This form of death is a rare occurrence, because death through disease usually terminates the individual life at an earlier stage." These authors suggest that the aging process may produce counter-reactions, such as hypertigrosis produced by the increased activity of the nucleolus, or hyperchromatosis and pyknosis of the nucleus which has hitherto been wrongly interpreted as a degeneration. This reaction as a defensive or compensatory change on the part of the individual nerve cells may include division of the nucleoli and the nuclei of the cells as well.[33]

References

1. Cottrell, L.: Histologic variations with age in apparently normal peripheral nerve trunks. Arch. Neurol. & Psychiat. 43:1138-1150 (1940).
2. Rexed, B.: Contributions to knowledge of postnatal development of peripheral nervous system in man; Studies of bases and scope of systematic investigations into fibre size in peripheral nerves. Acta psychiat. et neurol. Suppl. 33:1-206 (1944).
3. Norris, A. H., Shock, N. W., and Wagman, I. H.: Age changes in the maximum conduction velocity of motor fibers of human ulnar nerves. J. Appl. Physiol. 5:589-593 (1953).
4. Birren, J. E., and Wall, P. D.: Age changes in conduction velocity, refractory period, number of fibers, connective tissue space and blood vessels in sciatic nerve of rats. J. Comp. Neurol. 104:1-16 (1956).
5. Corbin, K. B., and Gardner, E. D.: Decrease in number of myelinated fibers in human spinal roots with age. Anat. Rec. 68:63-74 (1937).
6. Gardner, E.: Decrease in human neurones with age. Anat. Rec. 77:429-536 (1940).
7. Mannell, W. A., and Rossiter, R. J.: Effect of age on Wallerian degeneration in the rat. Proc. Soc. Exper. Biol. & Med. 80:262-264 (1952).
8. Moyer, E. K., Kimmel, D. L., and Winborne, L. W.: Regeneration of sensory spinal roots in young and in senile rats. J. Comp. Neurol. 98:283-307 (1953).
9. Truex, R. C.: Morphological alterations in the gasserian ganglion cells and their association with senescence in man. Am. J. Pathol. 16:255-268 (1940).
10. Truex, R. C., and Zwemer, R. L.: True fatty degeneration in sensory neurons of the aged. Arch. Neurol. & Psychiat. 48:988-995 (1942).
11. Kuntz, A.: Histological variations in autonomic ganglia and ganglion cells associated with age and with disease. Am. J. Path. 14:783-795 (1938).
12. Sulkin, N. M., and Kuntz, A.: Histochemical alterations in autonomic ganglion cells associated with aging. J. Gerontol. 7:533-543 (1952).
13. Sulkin, N. M.: Histochemical studies of the pigments in human autonomic ganglion cells. J. Gerontol. 8:435-445 (1953).
14. Sulkin, N. M.: Histochemical studies on muco-proteins in nerve cells of the dog. J. Biophys. & Biochem. Cytol 1:459-468 (1955).
15. Gatenby, J. B., and Moussa, T. A.: The neurons of the human autonomic system and the so-called "senility pigment." J. Physiol. 114:252-254 (1951).
16. Unger, K.: Ueber Altersveränderungen in den Grenzstrang-Ganglien der Ratte. Anat. Anz. 98:13-23 (1951).
17. Ehlers, P.: Ueber Altersveranderungen an Grenzstrang-Ganglien vom Meerschweinchen. Anat. Anz. 98:24-34 (1951).
18. Bailey, A. A.: Changes with age in the

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spinal cord. Arch. Neurol. & Psychiat. 70:299-309 (1953).

19. Appel, F. W., and Appel, E. M.: Intracranial variation in the weight of the human brain. Human Biol. 14:48-68; 235-250 (1942).

20. Bailey, P., and Von Bonin, B.: The isocortex of man. Urbana, University of Illinois Press, 1951.

21. Todd, T. W.: A liter and a half of brains. Science 66:122-125, Aug. 5, 1927.

22. Graves, J., and Himwich, H. E.: Age and the water content of rabbit brain parts. Am. J. Physiol. 180:205-208 (1955).

23. Lowry, O. H., Hastings, A. B., McCay, C. M., and Brown, A. N.: Histochemical changes associated with aging. IV. Liver, brain and kidney in rat. J. Gerontol. 1:345-357 (1946).

24. Strobel, T.: Ueber den Trochensubstanzgehalt verschieden Hirnteile. Zentralbl. ges. Neurol. u. Psychiat. 166; 161-169 (1939).

25. Aprison, M. H., and Himwich, H. E.: Relationship between age and cholinesterase activity in several rabbit brain areas. Am. J. Physiol. 179:502-506 (1954).

25. Fazekas, J. F., Alman, R. W., and Bessman, A. N.: Cerebral physiology of the aged. Am. J. Med. Sc. 223:245-257 (1952).

27. Scheinberg, P., Blackburn, I., Rich., M., and Saslaw, M.: Effects of aging on cerebral circulation and metabolism. Arch. Neurol. & Psychiat. 70:77-85 (1953).

28. Brody, H.: Organization of the cerebral cortex. III. A study of aging in the human cerebral cortex. J. Comp. Neurol. 102:511-556 (1955).

29. Hodge, C. F.: Changes in ganglion cells from birth to senile death. J. Physiol. 17:129-134 (1894).

30. Ellis, R. S.: Norms for some structural changes in the human cerebellum from birth to old age. J. Comp. Neurol. 32:1-33 (1920).

31. Harms, J. W.: Alterserscheinungen im Hirn von Affen und Menschen. Zool. Anz. 74:249-256 (1927).

32. Inukai, T.: On the loss of Purkinje cells with advancing age from the cerebellar cortex of the albino rat. J. Comp. Neurol. 45:1-31 (1928).

33. Andrew, W.: Structural alterations with aging in the nervous system. J. Chron. Dis. 3:575-596 (1956).

34. Spiegel, A.: Ueber die degenerativen Veränderungen in der Kleinhirnrinde im Verlauf des Individual-zyklus vom *Cavia cobaja*. Marcgr. Zool. Anz. 79:173-182 (1928).

35. Sosa, J. M.: Comments made in the symposium on aging of the nervous system. J. Gerontol. 7:443 (1952).

36. Vogt, C., and Vogt, O.: Ageing of nerve cells. Nature, London 158:304 (1946).

37. Vogt, C., and Vogt, O.: Importance of neuroanatomy in the field of neuropathology. Neurology 1:205-218 (1951).

38. Vogt, C., and Vogt, O.: Die Anatomische Vertiefung der menschlichen Hirnlokalisation. Klin. Wchnschr., 29:111-125 (1951).

39. Andrew, W., and Cardwell, E. S.: Neuronophagia in the human cerebral cortex in senility and in pathologic conditions. Arch. Path. 29:400-414 (1940).

40. Baun, F.: Histologisch-statistische Untersuchungen am Grosshirn des Pferdes mit besonderer Berücksichtigung der Mengen- und Artverhältnisse der Gliazellen zu den Ganglienzellen. Dissertation, Tierärztliche Hochschule. Hannover, Germany, 1951.

41. Brownson, R. H.: Perineural satellite cells in the motor cortex of aging brains. J. Neuropath. & Exper. Neurol. (*a*) 14:424-432 (1955); (*b*) 15:190-195 (1956).

Marriages increase in 1956*

In 1956, as in the year before, the number of marriages in the United States increased somewhat. According to present indications, there were about 1,587,000 marriages during the year, compared with 1,542,000 in 1955 and 1,491,000 in 1954. Despite this upswing, the marriage rate in 1956—9.4 per 1,000 population (including the Armed Forces overseas)—was only a shade above the postwar low of 9.2 per 1,000 recorded in 1954. Moreover, the annual increase in marriages is likely to be small for the balance of this decade; after the early 1960's, however, marriages should rise rapidly as the large numbers of persons born after World War II come of age.

Most States recorded a small increase in marriages during 1956, judged by available figures for the first 10 months of the year, but two States experienced a fairly pronounced upswing. In Indiana, marriages increased by almost 17 percent; in Oklahoma, the rise exceeded 11 percent and continued an uptrend which started during 1952.

On the other hand, 11 States reported a decrease in marriages between 1955 and 1956, as is evident from the accompanying table. The declines were relatively small—under 5 percent in Nebraska and Georgia, and 2 percent or less in the other nine States.

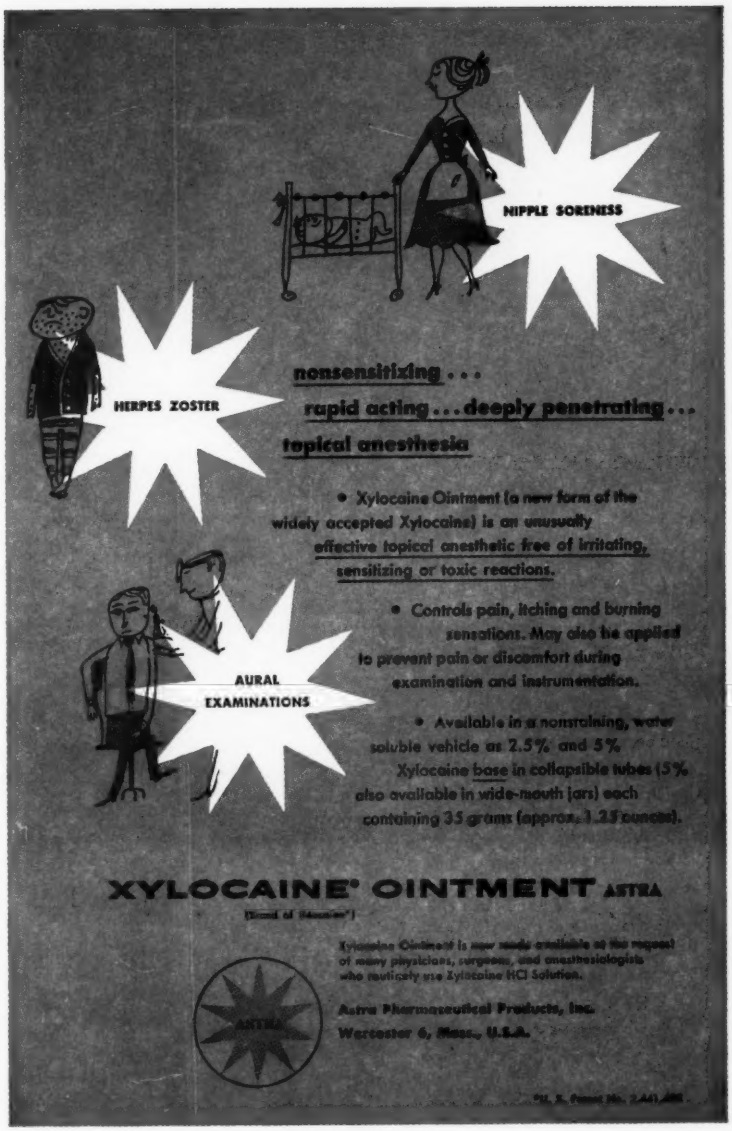
The leading cities showed similar trends. In those with at least 100,000 population, as a group, there were 3 percent more marriages in the first 10 months of 1956 than in the correspond-

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, December 1956.

ing period of 1955. Seventy-four of these urban areas, or almost three fourths of the total, recorded increases; in 29 there were decreases. New Orleans was the only city in which marriages declined by more than one tenth, whereas nine urban centers reported increases of that magnitude.

Among the cities with at least 1,000,000 population, Philadelphia alone reported fewer marriages in 1956, their number for the year dropping by about 5 percent. In New York City, marriages increased from 68,615 in 1955 to about 70,300 in 1956. The rise was also not much above 2 percent in Detroit, but exceeded 6 per cent in Chicago and Los Angeles.

All but one of the country's popular marriage centers recorded increases in 1956. The rise was 4 percent in Reno, 5 percent in Las Vegas, 11 percent in Miami, and 20 percent in Elkton. In Yuma, by contrast, marriages fell off more than 4 percent for the year, as a result of State-wide legislation requiring a premarital serological test and a waiting period of 48 hours. Up to the closing weeks of the year, Yuma, as well as the remainder of Arizona, had been registering more marriages than in the year before. However, starting with December 7, when the new law became effective, marriages plunged downward. From present indications, it is likely that marriages in Arizona will drop from approximately 22,200 in 1956 to about 8,000 in 1957, with almost two thirds of the decrease occurring in Yuma. This downswing in Arizona will no doubt be balanced by increases in adjacent areas.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Further rise in accidental deaths*

In 1956 the number of fatal accidental injuries in the United States increased for the second successive year. The toll, according to present indications, may exceed 94,500 deaths—about 2,000 more than in 1955 and 5,000 above the total in 1954. It appears that the accident death rate for the year just ended was not appreciably different from that recorded in 1955, namely 56.6 per 100,000 population. Year after year, accidents in our country outrank every other cause of death except the cardiovascular-renal diseases and cancer.

The rise in the accident death toll in 1956 is accounted for by the increase in fatalities from motor vehicle accidents. Approximately 40,000 lives were lost in such mishaps, or about 2,000 more than in the preceding year. It seems likely from the data available at this time that the death toll from motor vehicle accidents reached a new high. Furthermore, the number of fatalities per 100 million vehicle miles has increased for the second year in a row. In 1956, as in many prior years, motor vehicle accidents accounted for more than two fifths of all accidental deaths in the United States. These facts underscore the urgency of the National Safety Council slogan, "Back the Attack on Traffic Accidents."

The number of lives lost in each of the other main classes of accidents showed no appreciable change from the year before. Injuries sustained in and about the home were responsible for approximately 28,000 deaths in 1956. These fatalities comprised about 30 percent of the total accident mortality, and thus continued as the second largest category of fatal mishaps. Public accidents other than those involving motor vehicles killed more than 16,000 people during the year. Deaths from injuries arising out of and in the course of employment totaled about 14,000, of which more than 3,000 involved a motor vehicle.

Catastrophes—accidents in which five or more persons are killed—took more than 1,300 lives in the United States during 1956, about 150 less than in 1955. The more favorable record reflects the smaller death toll in major catastrophes —those in which 25 or more lives are lost. During 1956 there were five such catastrophes which accounted for about 270 lives; in 1955 nine catastrophes of this magnitude caused the loss of more than 600 lives.

Aviation accidents were responsible for three of the five disasters in 1956. One of these mishaps, on the last day of

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June, resulted from the collision over Arizona's Grand Canyon of two passenger planes, both on scheduled flights. This disaster, taking 128 lives, was not only the largest of the year, but also the worst commercial air transportation accident on record. The other two major aviation catastrophes were military transport plane crashes—one took place at Fort Dix, N. J., on July 13, killing 46 people; the other, in which 40 lives were lost, occurred on February 17 near Oakland, Calif. The earliest disaster of the year was a passenger train wreck on January 22 in Los Angeles, causing 30 fatalities. Fifth in order among the catastrophes was a tornado on April 15 which struck near Birmingham, Ala., taking 25 lives.

It is many years since the death toll from outstanding natural disasters was so low. In 1955, the hurricanes, floods, and tornadoes accounted for the loss of more than 450 lives, compared with 25 in the year just ended. In each of the four years prior to 1956, natural catastrophes headed the list of disasters.

More than one fourth of the lives lost during 1956 in all catastrophes involving five or more deaths were in motor vehicle accidents. Conflagrations, most of them in the home, accounted for an additional one fifth of the fatalities. Military aviation and civilian aviation each contributed about one seventh of the total. Natural catastrophes, railroad and water transportation accidents comprised the bulk of the remainder.

Thyroid gland disorders*

The thyroid gland is subject to a number of disorders, both malignant and nonmalignant. Predominant in the latter group are simple enlargement of the gland, nontoxic nodular goiter, hyperthyroidism, and hypothyroidism. The current prevalence of nonmalignant thyroid disorders is not known, but it is certainly far below the prevalence two decades ago, when an estimated 1,200,000 people in the United States—9 per 1,000 population—were affected. Thyroid cancer cases now number about 5,000.

The toll of disability and death exacted by the diseases of the thyroid gland is relatively small. In the National Health Survey of 1935-36, the frequency of disabilities lasting a week or longer was only 0.6 per 1,000 persons a year. In 1954, the thyroid diseases accounted for 2,227 deaths in our country, 1,000 of which were ascribed to thyroid cancer and 863 to toxic goiter (hyperthydroidism).

Disorders of the thyroid affect many more females than males. In the National Health Survey of two decades ago, the prevalence of these conditions in females was 8 times that in males at ages 20-34, and 5½ times that among males at ages 35-64.

The prevalence of goiter in our country has long been highest in the States bordering on the Great Lakes and in certain mountainous areas. This geographic concentration apparently reflects the lack of sufficient iodine in the water supply and in the soil. In recent decades, the increased availability of sea foods rich in iodine and the use of iodized salt have lowered the frequency of goiter among residents of those regions. However, prevalence of goiter there is still higher than it is in other parts of the country. In contrast, thyroid cancer has no characteristic geographic pattern.

Toxic goiter, which accounts for most deaths from nonmalignant thyroid disease, has recorded a sizable reduction in mortality, a reflection of both decreased frequency and improved treatment. In the decade between 1943-45 and 1953-55, the death rate from toxic goiter fell more than 75 percent among white females insured under Industrial policies in the Metropolitan Life Insurance Company; among insured males, the reduction was almost as rapid. In both sexes, marked reductions in mortality from this cause were recorded throughout the adult ages.

In contrast, the trend of mortality from cancer of the thyroid has been moderately upward in both sexes, and particularly among older women. It is not possible, however, to determine how much of this increase represents a true rise in frequency and how much of it reflects more frequent recognition of the condition. Newer diagnostic techniques, notably the

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, September 1956.

use of radioactive iodine, help to differentiate malignant from nonmalignant disorders of the gland.

The outlook for persons with nonmalignant thyroid disorders is generally good. This is indicated by the combined experience of many large Life Insurance companies during 1935-1950† on selected applicants accepted for Ordinary Life insurance who had a nontoxic goiter or a history of surgery for toxic or nontoxic goiter at the time of their insurance medical examination. The mortality among those with nontoxic goiter, with or without operation, was little different from that among standard Ordinary risks generally; for those with a history of surgery for toxic goiter, the mortality was only slightly higher than for standard risks.

Recent clinical studies likewise show a good prognosis for thyroid diseases. Radioactive iodine has been used in the treatment of hyperthyroidism, and has proved very effective in some types of cases. Good results are obtained by surgery in thyroid cancer. A recent follow-up study of the experience of a large cancer hospital showed that nearly half such patients were known to be living and free of cancer five years after surgery. Other hospital experiences, however, indicate that the survival rate thereafter declines rather sharply. In inoperable thyroid cancer, radioactive iodine has proved of value in management of the condition.

Ways and means of preventing, diagnosing, and treating the thyroid diseases are better than at any time in the past. Further advances may be expected as wider application is made of existing knowledge, and as newer knowledge is developed through additional research.

†*1951 Impairment Study*, Society of Actuaries, April 1954.

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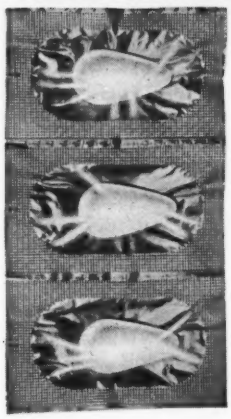

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Proprieties of tuberculosis management*

W. M. Peck, M.D.†

The pattern of tuberculosis control changes constantly. It changes in response to new information and needs, altered economy, predominant personalities and fads. Sometimes it flounders in complacency; other times it changes with almost chaotic flurry. But always guiding and determining this pattern are three components, the health department, the private physician, and the sanatorium, each performing a specialized function.

Since tuberculosis, as a contagious disease, is essentially a public health problem, the health department must occupy the position of over-all responsibility and initiative. The private physician must guide the attitude of the patient and his community and plead the right of the individual. And the sanatorium, with its clinical and laboratory resources for research, must work out new methods of treatment and new concepts to support a changing and progressive program. Yet it is true that sanatorium physicians, in their more or less monastic seclusion, speak mostly to other sanatorium physicians, and public health physicians may be equally guilty of similar parochial practices. Since we are now in one of the more chaotic periods of change with aspects that are both heartening and hazardous, it is important that these groups maintain the closest possible communication with one another so they may work together wisely and with adaptability through this unusual period of turbulence.

Up to now it has been customary to assert as a dictum that the basic philosophy of treatment has changed little and that drug therapy and surgery are only serviceable adjuncts to an established and time proved system. But now we must recognize that the basic philosophy itself is changing and that this constitutes the most radical departure in the changing pattern of control.

*Reprinted from *Public Health Reports*, December 1956.

†Dr. Peck, presently serving as chest consultant for the North Carolina State Board of Health, Raleigh, was previously medical director and associate superintendent of the North Carolina Sanatorium, McCain. He is the current president of the Southern Trudeau Society.

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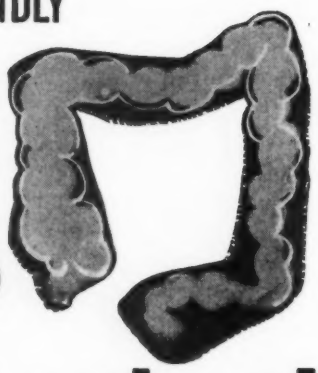

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The traditional concept, which is now giving way, was starkly realistic and recognized the uncertainty of predrug therapy and the fact that tuberculosis was essentially a relapsing disease. It aimed at bringing the patient into tentative equilibrium with his disease and at maintaining that precarious balance by sheltered, restricted living. It was harsh treatment. When a patient entered the sanatorium there was forced on him a sudden break in the continuity of his life. Life plans were stripped from him and reconstituted along lines of minor attainment and little responsibility. The usual values were inverted: ambition became evil and laziness a virtue. There was a suggestion of other-worldliness, of Magic Mountain mystery about the treatment, a certain ecstasy which sustained the patient without realism and eventually enervated him. He was taught the doctrine of submission and introduced to the numbing despair of relapse through such slogans as "once tuberculous, always tuberculous." Some patients survived their illness to acquire success or even greatness, but many succumbed to the trivial life of semi-invalidism. Thus the "cure" in days when there was no justifiable alternative.

But since then, in a matter of a very few years, a nearly specific group of drugs has appeared, changing the course and behavior of tuberculosis to an extent that it has little in common with the disease we knew only 10 years ago. Such fundamental aspects as its pathology, bacteriology, and perhaps even its epidemiology have been altered by drug action. The significance of these changes we have been slow to recognize and accept because of our innate distrust of the disease and its record for relapse. But now we are beginning to see that with optimal treatment recovery is nearly predictable and that the relapse rate—if we can project short-term results—has dropped almost to the point of removing tuberculosis from the category of a relapsing disease.

This is a difficult adjustment for all of us to make, but obviously we, who deal with tuberculosis, must "catch up" with this new type of disease and exploit its changes for the benefit of the patient and the control program. The period of hospitalization has already been shortened considerably and, as we gather confidence, probably can be shortened more, perhaps very much more. Patients now return to work within a few months of discharge and usually to their previous employment. The need for treatment in tuberculosis, then, no longer should be regarded as an overwhelming personal tragedy, and the period of sanatorium care, though intense and highly specialized, should be regarded merely as an episode which, in itself, does not disrupt or materially alter the continuity of one's life.

These optimistic remarks, of course, cannot apply to all who enter a sanatorium. Belated diagnosis and delayed admission still carry some patients past a point of possible return of adequate function. Some of these still die from tuberculosis; others survive as pulmonary

cripples to whom one can offer only prolonged custodial care.

TREATMENT REGIMEN

Let us turn now to the treatment which has justified such a reversal of concept.

The goal of drug treatment, ideally, would be to sterilize the lesion of all tubercle bacilli with reversion of the tuberculin reaction. But under usual clinical conditions with our available drugs, this goal cannot be fully realized. Fortunately, there is a tangible alternate goal which falls just short of ideal. This is based on the faculty of drugs, especially of isoniazid, to destroy those bacilli which are in an active phase of multiplication and to depress the metabolic activities of the remaining organisms to a point of inertness, comparable, perhaps, to hibernation—a unique and definite vegetative state. Bacteriologists have shown that many of these bacilli cannot be induced to grow on culture media, whereas others will grow with difficulty only after many months of incubation or with special stimulation. In this dormant state tubercle bacilli continue to produce sufficient tuberculoproteins to maintain a positive tuberculin reaction but not enough to cause progressive disease. Rapid resolution of pneumonic disease and, frequently, cavity closure occur in consequence of this depressed state of the parasite; and we may postulate that host factors—factors which unfortunately permitted disease to develop in the first place—may have opportunity to rectify themselves.

Isoniazid is by far the best drug, and isoniazid and para-aminosalicyclic acid seem to be the most satisfactory combination. Drug therapy is usually initiated by these two, and with almost predictable success. When they fail—as they do rarely under favorable circumstances and frequently under conditions of compromise—one loses much of the sureness, and treatment henceforth becomes difficult, specialized, and less certain. Then one must grope with problems of drug resistance, synergism, and toxicity in seeking successful combinations with streptomycin, cycloserine, pyrazinamide, or viomycin. Sometimes the surgeon must remove refractory areas of disease, the persistent cavity or the caseous mass, before sputum can be converted.

The achievement of the dormant state of the bacilli is the first objective, and the second objective is to maintain them in this state. Fortunately, it appears that dormancy can be maintained by the rather simple expedient of continuing drug therapy. Isoniazid by itself appears to be adequate for this purpose, and ideal since it is pleasant to take and exceedingly low in toxicity and cost. Probably, continued dormancy can be further assured by the prophylactic removal of those areas prone to reactivation such as residual cavities or areas of unresolved disease which may be relatively inaccessible to the blood stream and hence to drug effect.

The tragedy of drug therapy is the ever-present possibility of interruption or compromise in the early course of treat-

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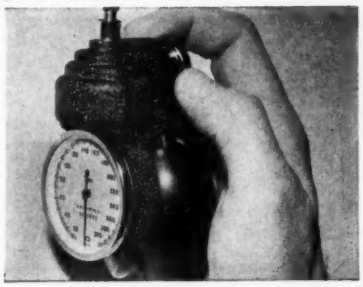

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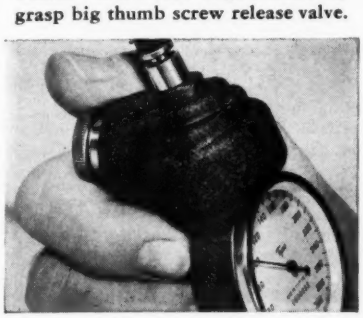

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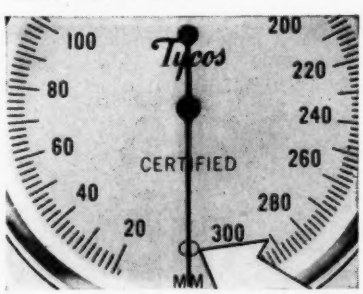

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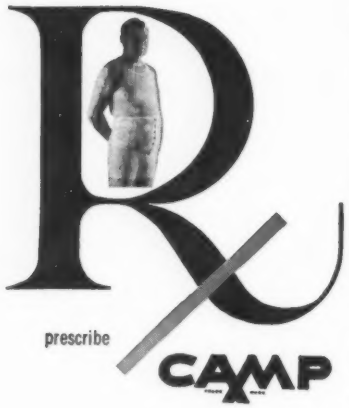

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ment. The initial exposure to drugs finds the organisms particularly vulnerable. And intense, supervised drug therapy at this time will cause sputum conversion in about 80 to 90 percent of patients in the first 4 months. On the other hand, if initial therapy is inadequate or interrupted, it may have the deplorable effect of merely altering the host-parasite relationship sufficiently to produce a remarkable degree of chronicity, with active, smoldering disease persisting. It may neither improve nor worsen with further treatment.

Usually, there are about 40 such patients in the 700-bed North Carolina Sanatorium at McCain, N. C., many of whom are in its prison division. For the most part they are poor, defeated creatures with long histories of repeated "short bursts" of drug therapy. Characteristically, their shopworn lesions have practically ceased to respond to drugs, even to new ones, such as cycloserine, yet under flagrant abuse they seldom get worse. Prisoners escape and run for hours or days through the swamps. They go on the bum or work at heavy construction for months before being apprehended and returned, still hale and hearty, but with sputum that is unalterably positive. This kind of disease is the stigma of erratic drug therapy and may be produced in the well-meaning, law-abiding citizen as well as the criminal. There is a heavy responsibility on all of us lest, inadvertently by compromise or misdirection, we encourage another to join this forlorn and hopeless crowd. One must never forget that the period of early treatment is a critical one, and the difference between adequate treatment and almost adequate treatment may be relatively slight.

Assurance of proper treatment during this early crucial period can be given best if the patient is admitted to a sanatorium. Once the organisms presumably become dormant, when the sputum becomes negative and resolution is well under way and any needed surgery is accomplished, the situation alters and much greater latitude is possible. This permits earlier discharge home and earlier return to work under the continued protection of isoniazid for a prolonged period of time, possibly for 1 or 2 years or longer; and this can be done with a degree of safety that is foreign to all earlier experience.

THE HOME CARE QUESTION

This treatment represents the ideal way for handling the tuberculous patient, and one cannot depart far from the ideal without some jeopardy. The question of home care, however, comes up and must be answered. The possibility of treatment at home is appealing to the patient and his relatives and has enough validity even to command critical medical attention. An argument for a home care program might be presented as follows: Drug therapy if carried out conscientiously will cause conversion of the sputum in 80 to 90 percent of initial treatment cases, and it will do this in spite of great latitude in such ancillary matters as bed rest, good nutrition, and psychotherapy. Accordingly, proponents of a program which relies primarily on home care would provide the following:

1. A system of supervision designed to insure uninterrupted drug therapy.

2. Medical supervision which would (*a*) endeavor to admit to the program only those patients who might be expected to have rapid sputum conversion, (*b*) remain alert to the development of complications or possibility of treatment failure, and (*c*) recognize indications for surgery.

These proponents of home care recognize that such a program is not cheap, particularly since the majority of tuberculosis patients require welfare assistance whether in or out of a sanatorium. They recognize that a considerable staff is required, including medical and nursing staff and social workers. Central clinic, roentgenographic, and laboratory facilities must be readily available. Arrangements must be made for nurses or social workers, or both, to visit the home at monthly intervals. Lansdown and Jones estimated the cost of treating a New York City welfare patient in his home at approximately $6 a day whereas the cost for a similar patient in a local sanatorium was approximately $13 a day. This as well as other estimates would indicate that a home care program is about one-third to one-half as expensive as sanatorium care. Thus, the apparent cheapness of a home care program is largely illusory and is dependent on spreading the cost through a number of departments such as welfare, public health, and social service.

Opponents of a home care program point out that most of the tuberculosis patients come from underprivileged, underendowed groups who cannot assume the responsibility for their care under such a sketchy framework of supervision and that serious lapses of drug therapy will occur. Neither do they believe that bed rest, nutrition, and emotional factors are of so little consequence that they can be left to chance, especially in the determination of long-term results as opposed to short-term sputum conversion rates. They doubt that, without ready access to special facilities, sufficient sputum, gastric, or roentgenographic studies would be made for proper evaluation or that the patient could be readily persuaded to accept surgery at an optimum time. They point out, wisely, that enthusiasm for cheaper care in the home must not blind one to the communicability of tuberculosis or to risk of creating false and disastrous attitudes of nonchalance toward public health aspects of the disease.

THE REASONABLE ATTITUDE

Until further data are presented a conservative and reasonable attitude in this controversy might be:

1. Where sanatorium facilities exist, reliance should be based primarily on sanatorium treatment, with home care restricted to the convalescent period and to patients temperamentally unsuited to hospitalization.

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Vischer[1] reports that 37 of 38 patients treated with 'Compazine' for psychoneurotic symptoms had "marked" or "moderate" relief.

"Confusion and depression disappeared dramatically, and primary complaints became less important to them as they became far more relaxed, less nervous and less tense. Many were able to return to work or had renewed interest in their surroundings and hobbies."

1. Vischer, T. J.: Clinical Study of Proclorperazine, A New Tranquilizer for the Treatment of Non-Hospitalized Psychoneurotics, New England J. Med. 256:26 (Jan. 3) 1957.

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2. Where sanatorium beds are insufficient and health department personnel and facilities are sufficient to increase activities substantially, a home care program should be developed. This program should be designed with close coordination existing between the sanatorium and home phases of treatment. Under these circumstances most patients would start treatment within the sanatorium for the initial evaluation and indoctrination and for the establishment of a suitable and tolerated drug regimen. After several weeks or months, depending on the demand for beds, the patient might be transferred (not discharged) to the home care program, but he might return to the sanatorium at later dates for periods of reevaluation or for surgical procedures. This is not an ideal program, particularly for patients who must return to forlorn and crowded homes. But it may be justified by circumstances, and it has been reasonably successful as practiced by Lansdown and Jones in New York City, Lichtenstein in Chicago, and others, especially in urban areas where excessive dispersion of the population is not a factor.

The methods of tuberculosis control, then, are by no means immutable since modern drug therapy permits increased flexibility when fundamental principles of administration are respected and accomplished with certainty. The components of a treatment program—the sanatorium, the clinic, the home—may be used with varying emphasis, depending on community resources. Extensive reliance on sanatorium facilities presents the fewest problems and the further one departs from this convention the greater becomes the responsibility, concern, and financial need of the health departments. Programs relying heavily on clinic and home treatment are indeed possible and even justified by circumstances, but they should be undertaken only after sober evaluation of resources and as a major interest. Even so, under carefully controlled conditions, there is justification for further cautious exploration in this direction. There is danger, however, that home care programs may be undertaken somewhat hastily because of a mistaken assumption of great economy, because of popular clamor, or because of insouciance. And there is danger that home care and sanatorium care may be pitted against one another in wasteful competition. Such attitudes must not be tolerated. Instead one must seek constantly to command optimum use of all these community resources.

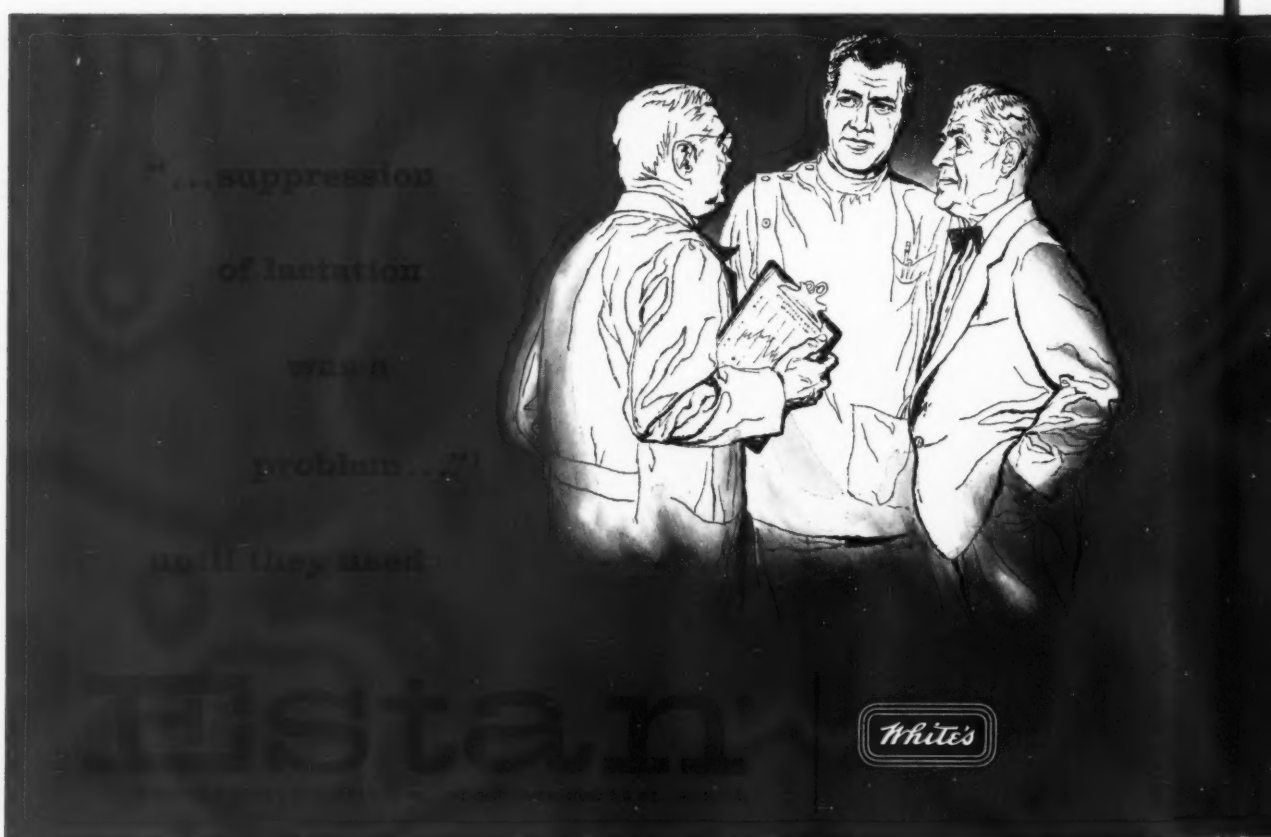
This concept presents us with opportunity for building a program on a much broader and more secure base, an opportunity for freshening and strengthening a campaign which has lost much of its momentum, an opportunity for reawakening those forces which once distinguished tuberculosis control measures as an actual crusade in which the entire community eagerly joined.

Books received

Books received for review during the period from January 5 to February 5, 1957, are listed below. Reviews will be published as space permits.

MODERN OPERATIVE SURGERY. Volume II. Edited by the late G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S., F.R.C.S.E., F.R.A.C.S., F.A.C.S., Professor of Surgery in the University of London and Director of the Department of Surgery at the British Postgraduate Medical School; Surgeon, Hammersmith Hospital; Emeritus Professor of Surgery in the University of Durham; Honorary Consulting Surgeon, Royal Victoria Infirmary, Newcastle-upon-Tyne; and Lambert Charles Rogers, V.R.D., M.Sc., M.D., F.R.C.S., F.R.C.S.E., F.R.A.C.S., F.A.C.S., Professor of Surgery, University of Wales; Director of Surgical Unit, Cardiff Royal Infirmary; Surgeon, United Cardiff Hospitals; Adviser in Surgery, Welsh Regional Hospital Board; Consultant in Neurosurgery to the Royal Navy; Member of Council and formerly Member of Court of Examiners and Vice President, Royal College of Surgeons of England. With a foreword by Sir Gordon Gordon-Taylor, K.B.E., C.B., M.A., LL.D., Sc.D., M.D., M.S., F.R.C.S., F.R.C.S.E., F.R.C.S.I., F.R.A.C.S., F.A.C.S. Ed. 4, in two volumes. Cloth. Pp. 2614, with illustrations. Price $17.50. Paul B. Hoeber, Medical Book Department of Harper & Brothers, 49 E. 33rd St., New York 16, 1957.

THE TREATMENT OF FRACTURES. Volume II. By Lorenz Böhler, M.D., Director of the Accident Hospital, Vienna XX; Professor of Accident Surgery, University of Vienna; Translated from the Thirteenth German Edition by Otto Russe, M.D., Director of



the Accident Hospital, Vienna XII, and R. G. B. Bjornson, M.D., Diplomate, American Board of Radiology. Cloth. Pp. 1508, with illustrations. Price $17.50. Grune & Stratton, 381 Fourth Avenue, New York City 16, 1957.

CLASSICS IN ARTERIAL HYPERTENSION. By Arthur Ruskin, M.D., F.A.C.P., Associate Professor of Internal Medicine, University of Texas—Medical Branch; Consultant to the U.S. Public Health Service Hospital, Galveston, Texas. Cloth. Pp. 358, with illustrations. Price $9.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

PRACTICAL OFFICE GYNECOLOGY. By Albert Decker, M.D., D.O.G., F.A.C.S., Clinical Professor Gynecology and Obstetrics, New York Medical College; Clinical Professor Gynecology and Obstetrics, New York Polyclinic Medical School and Hospital; Attending Gynecologist, Flower Fifth Avenue Hospital, Metropolitan Hospital, Knickerbocker Hospital, Polyclinic Hospital, Bird S. Coler Memorial Hospital and Home; and Wayne H. Becker, M.D., D.O.G., Assistant Clinical Professor of Obstetrics and Gynecology, New York University College of Medicine; Assistant Attending Gynecologist, Bellevue and University Hospital; Associate Attending Gynecologist, Knickerbocker Hospital. Cloth. Pp. 388, with illustrations. Price $10.50. F. A. Davis Company, 1914-16 Cherry Street, Philadelphia 3, 1956.

ALLERGIC DERMATOSES DUE TO PHYSICAL AGENTS. Edited by Rudolf L. Baer, M.D., Associate Professor of Clinical Dermatology and Syphilology, New York University Postgraduate Medical School. Cloth. Pp. 110, with illustrations. Price $3.00. J. B. Lippincott Company, E. Washington Square, Philade'phia 5, 1956.

OCCUPATIONAL THERAPY—Principles and Practice. By William Rush Dunton, Jr., M.D., Founder and Former Editor of Occupational Therapy and Rehabilitation; and Sidney Licht, M.D., Editor Emeritus of the American Journal of Physical Medicine. Ed. 2. Cloth. Pp. 373, with illustrations. Price $8.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

INTEGRATED ANATOMY AND PHYSIOLOGY. By Carl C Francis, A.B., M.D., Associated Professor of Anatomy, Department of Anatomy, Western Reserve University, Cleveland, Ohio; and Gordon L. Farrell, M.D., Assistant Professor of Physiology, Department of Physiology, Western Reserve University, Cleveland, Ohio. Ed. 3. Cloth. Pp. 641, with illustrations. Price $5.85. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1957.

MANUAL OF ANESTHESIOLOGY for Residents and Medical Students. By Herman Schwartz, M.D., S. H. Ngai, M.D., E. M. Papper, M.D. From the Anesthesiology Service, The Presbyterian Hospital, and Department of Anesthesiology, Columbia University, College of Physicians and Surgeons, New York, New York. Cloth. Pp. 170, with illustrations. Price $4.25. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

THE PHYSICIAN-WRITER'S BOOK . . . Tricks of the Trade of Medical Writing. By Richard M. Hewitt, A.M., M.D., Senior Consultant, Section of Publications, the Mayo Clinic; Associate Professor of Medical Literature, the Mayo Foundation, Graduate School, University of Minnesota. Cloth. Pp. 415, with illustrations. Price $9.00. W. B. Saunders Company, W. Washington Square, Philadelphia 5, 1957.

MENTAL HEALTH ADMINISTRATION. By Jack R. Ewalt, M.D., Commissioner, Massachusetts Department of Mental Health; Clinical Professor of Psychiatry, Harvard Medical Schooi, Boston, Massachusetts. Cloth. Pp. 168. Price $5.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Illinois, 1956.

FUNDAMENTALS OF CLINICAL FLUOROSCOPY With Essentials of Roentgen Interpretation. By Charles B. Storch, M.D., Associate Attending Roentgenologist, Radiodiagnostic Department, Beth-El Hospital, Brooklyn, New York. Ed. 2. Cloth. Pp. 305, with illustrations. Price $8.75. Grune & Stratton, 381 Fourth Ave., New York City 16, 1957.

THE RECURRENT LARYNGEAL NERVES IN THYROID SURGERY. By William H. Rustad, M.D., Assistant Clinical Professor of Surgery, University of California School of Medicine; Visiting Staff (Surgery) University of California Hospital; Staff Member St. Luke's, Mt. Zion, and Hahnemann Hospitals, San Francisco, California. Cloth. Pp. 47, with illustrations. Price $4.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

PRACTICAL DIAGNOSIS AND TREATMENT OF LIVER DISEASE. By Carroll Moton Leevy, M.D., Director of Clinical Investigation, Director of Outpatient Department, and Attending Physician, Jersey City Medical Center, Jersey City, N.J., Consultant in Medicine, U.S. Naval Hospital, St. Albans, N.Y. With a foreword by Franklin M. Hanger, M.D., Professor of Medicine, College of Physicians and Surgeons, Columbia University, New York, N.Y. Cloth. Pp. 336, with illustrations. Price $8.50. Paul B. Hoeber, Medical Book Department of Harper & Brothers, 49 E. 33rd St., New York 16, 1957.

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References:

1. Laufe, L. E., and McCarthy, J. J. Jr., Pennsylvania M. J. 59-914, August, 1956.
2. Garry, J., Obst. & Gynec., 7:422, April, 1956.
3. Rienzo, J. S., Am. J. Obst. & Gynec., 66:1248, December, 1953.
4. Masters, W. H., J. Am. Geriatrics Soc., 3:389, June, 1955.
5. Masters, W. H., and Ballew, J. W., Geriatrics, 10:1, January, 1955.

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Artz, D. Duane, from Burbank, Calif., to 1449 N. Gardner St., Hollywood 46, Calif.
Austin, Robert L., from Los Angeles, Calif., to 15045 E. Alondra Blvd., La Mirada, Calif.
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Barnes, Robert D., from 144 E. Sixth St., to 960 Park Ave., Plainfield, N. J.
Barnett, Louis, CCO '56; Grandview Hospital, 405 Grand Ave., Dayton 5, Ohio
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Barr, Otis A., from Box 164, to 122 E. Main St., Willamina, Ore.
Battersby, Joseph M., DMS '56; Phoenix Osteopathic Hospital, 4004 N. Seventh St., Phoenix 43, Ariz.
Baumeier Arlo P., from Kansas City, Mo., to Zauder Bldg., Pleasant Hill, Mo.
Bender, William B., KC '56; 15791 Northlawn Ave., Detroit 38, Mich.
Bess, Harold L., from Philadelphia, Pa., to 2 Red Rose Drive, Levittown, Pa.
Binning, William A., from 9437 Armley Ave., to 14808 E. Whittier Blvd., Whittier, Calif.
Blair, Arch J., from Troy, Kans., to Cassville Community Hospital, Cassville, Mo.
Blueskye, William C., from 812 Washington, to 511 Main St., Sturgis, Ky.
Bogard, Dorr E., COPS '56; 10173 Stonehurst Ave., Sun Valley, Calif.
Bondurant, Dale P., from 1141 N. Hampton Road, to Box 4411, Station A, Dallas 8, Texas
Bowden, Lee Joseph, from 593 Madison Ave., to 2621 N. George St., York, Pa.
Bowe, Edward B., KC '56; Civic Center Hospital, 1537-41 Jackson St., Oakland 12, Calif.
Boyce, Merle H., COPS '55; 1613 Pacific Coast Highway, Redondo Beach, Calif.
Bradley, R. D., from Memphis, Mo., to Gibson Hospital & Clinic, Edina, Mo.
Bradway, R. William, PCO '56; 214 W. Front St., Florence, N. J.
Brady, Walter E., from Corpus Christi, Texas, to Box 237, Portland, Texas
Brewer, Robert Stanley, from Covina, Calif., to 537 E. Vine Ave., West Covina, Calif.
Bricker, Leo D., from 8211 E. Houston Road, to 1019 Thompson St., Houston 7, Texas
Browning, Dale R., from Portland, Ore., to 575 N. E. Second St., Gresham, Ore.
Burns, C. P., from 221 N. Main St., to 69A Lake Shore Drive, St. Joseph, Mich.
Burns, Louisa, from Los Angeles, Calif., to 807 Prospect Ave., South Pasadena, Calif.
Burns, Robert C., KC 56; Stevens Park Osteopathic Hospital, 1141 N. Hampton Road, Dallas 11, Texas
Burton, Lionel G., from Malin, Ore., to Box 307, Estacada, Ore.
Button, William E., DMS '56; Mineral Area Osteopathic Hospital, Route 1, Farmington, Mo.

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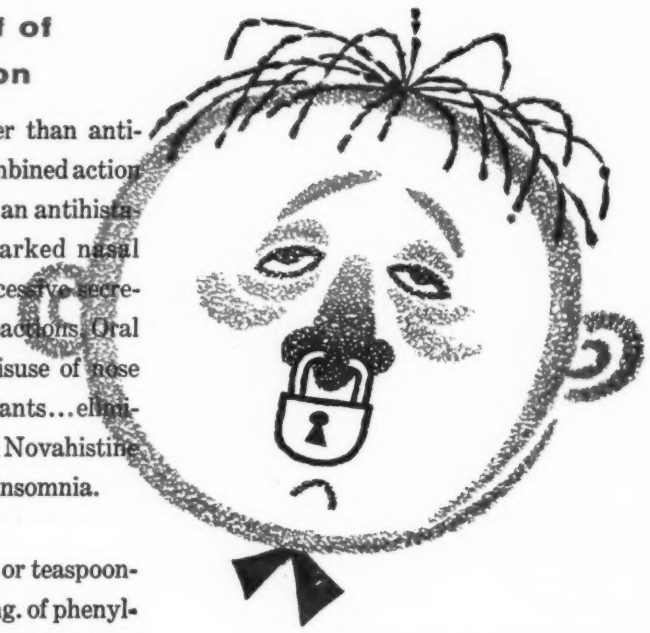

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Canter, Stanley, from St. Louis, Mo., to 4019 W. Rosecrans Ave., Hawthorne, Calif.
Carney, Glenn V., KC '56; Normandy Osteopathic Hospital, 7840 Natural Bridge Road, St. Louis 21, Mo.
Carozza, Dino L., from Doylestown, Ohio, to 123 N. Main St., Creston, Ohio
Cash, Phillip S., from West Des Moines, Iowa, to Des Moines General Hospital, 603 E. 12th St., Des Moines 16, Iowa
Cavalier, Joseph Nicholas, KC '56; Green Cross General Hospital, 1900 23rd St., Cuyahoga Falls, Ohio
Chaney, Jack V., DMS '56; Grandview Hospital, 405 Grand Ave., Dayton 5, Ohio
Charnov, Arthur R., from 12523 Third Ave., to 1725 Webb Ave., Detroit 6, Mich.
Chester, Charles O., from Box 73, to Community Hospital, Box 97, Granby, Mo.
Chester, Mary Alice, from Box 73, to Community Hospital, Box 97, Granby, Mo.
Clausing, Herbert P., from 12663 Renton Ave., to 13014 12th Ave., S.W., Seattle 66, Wash.
Cline, Duane D., from Los Angeles, Calif., to 508 N. Long Beach Blvd., Compton, Calif.
Coats, William H., from Big Sandy, Texas, to Wasco Community Hospital, Wasco, Calif.
Cole, Glen W., from 832 DeKalb St., to 833 DeKalb St., Norristown, Pa.
Conti, Joseph John, DMS '56; Grandview Hospital, 405 Grand Ave., Dayton 5, Ohio
Cooper, Ralph D., from Lebanon, Ore., to Normandy Osteopathic Hospital, 7840 Natural Bridge Road, St. Louis 21, Mo.
Corcoran, Andrew P., PCO '55; 35 N. Queen St., York, Pa.
Cordy, Edmond H., from Los Angeles, Calif., to 5050 Hooktree Road, La Canada, Calif.
Craig, Carl E., KCOS '56; Kirksville Osteopathic Hospital, 800 W. Jefferson St., Kirksville, Mo.
Cridling, Vance E., from Gower, Mo., to Cassville Community Hospital, Cassville, Mo.
Culotta, Peter David, COPS '55; 34 E. Olive Ave., Burbank, Calif.
Dana, Orrin W., KCOS '56; 1802 S. Orchard St., Kirksville, Mo.
Davis, Billy Jack, KCOS '56; Dallas Osteopathic Hospital, 5003 Ross Ave., Dallas 6, Texas
Davis, Robert Kenneth, from 3109 Greenville Ave., to 2620 Barnes Bridge Road, Dallas 18, Texas
De Laurier, C. J., from Cor. 16th St. & 30th Ave., N., to 1527 30th Ave., N., St. Petersburg 4, Fla.
DeLille, George A., from Los Angeles, Calif., to 2139 Placentia, Costa Mesa, Calif.
DeShong, D. Alfred, from Corpus Christi, Texas, to 7 E. Winthrop Road, Kansas City 13, Mo.
Doberenz, Werner E., DMS '56; South Bend Osteopathic Hospital, 2447 E. Jefferson Blvd., South Bend 15, Ind.
Downing, Allene C., from Onekama, Mich., to 206 E. Chapin St., Cadillac, Mich.
Downing, Donald D., from Onekama, Mich., to 206 E. Chapin St., Cadillac, Mich.
Duke, Irving, COPS '55; 7611 Balboa Blvd., W., Van Nuys, Calif.
Dybedal, Paul W., from Portland, Ore., to 1020 Seaboard Bldg., Seattle 1, Wash.
Evans, George E. C., DMS '56; Oklahoma Osteopathic Hospital, 744 W. Ninth St., Tulsa 5, Okla.
Farnum, D. A., from 724 New York Ave., to 1030 S. Seventh St., Sheboygan, Wis.
Fay, Joseph A., KCOS '56; Osteopathic Hospital of Maine, 335 Brighton Ave., Portland 4, Maine
Feldheim, Daniel H., KC '56; Doctors Hospital, 1087 Dennison Ave., Columbus 1, Ohio
Feldman, Raymond K., from 1222 S. Spaulding Ave. to 1802¾ N. Kingsley Drive, Los Angeles 27, Calif.
Ferens, Edwin W., DMS '56; Riverside Osteopathic Hospital, 165 George St., Trenton, Mich.
Ferris, Ronald, from Hollywood, Calif., to 4075 Tweedy Blvd., South Gate, Calif.
Fisher, Dolores, COPS '55; 2534 Cudahy, Walnut Park, Calif.
Fowler, William J., Jr., from 606 W. Elm St., to 507 W. Elm St., Eldon, Iowa
Fox, Morry S., KCOS '56; Northwest Hospital, 1060 N.W. 79 St., Miami 38, Fla.
Franta, William K., KC '56; Parkview Hospital, 1920 Parkwood Ave., Toledo 2, Ohio
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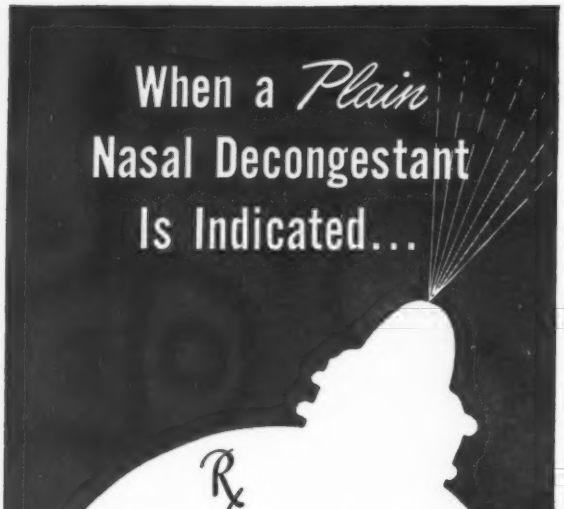

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Galusha, J. Harley, KC '56; Grandview Hospital, 405 Grand Ave., Dayton 5, Ohio

Ghiates, Michael P., from Greenville, Pa., to Box 39, Sheakleyville, Pa.

Glaspy, Clinton L., KC '56; 107 E. Ohio St., Clinton, Mo.

Goldin, Cyrus I., COPS '55; 11128 E. Whittier Blvd., Whittier, Calif.

Golding, Philip, KCOS '56; 1100 E. Orange St., Lancaster, Pa.

Gonzalez, Arturo, KC '56; Wetzel Osteopathic Hospital, 105 E. Ohio St., Clinton, Mo.

Gordon, Robert D., from 1000 Harrington Blvd., to 37309 Emery Drive, Mount Clemens, Mich.

Gorton, Julius C., KC '56; Hillside Hospital, 1940 El Cajon Blvd., San Diego 4, Calif.

Greenbaum, Jerome S., from Montrose, Calif., to 6673 Foothill Blvd., Tujunga, Calif.

Grewell, Dean M., from 243 Lewis Ave., to 245 Lewis Ave., Billings, Mont.

Guenther, Lewis H., KCOS '56; Mesa Memorial Hospital, Tenth & Grand, Grand Junction, Colo.

Hackett, William D., from Detroit, Mich., to 614 N. Main St., Milford, Mich.

Hall, Harry C., from 5771 Ridge Road, to 5752 Ridge Road, Parma 29, Ohio

Hall, Jessie N., KC '56; Fort Worth Osteopathic Hospital, 1000 Montgomery St., Fort Worth 7, Texas

Hammond, Auldine C., from Port Arthur, Texas, to 3175 Calder Ave., Beaumont, Texas

Hansen, Stanley F., from Los Angeles, Calif., to Osteopathic Hospital of Kansas City, 926 E. 11th St., Kansas City 6, Mo.

Harmon, Robert L., Jr., from Rolling Hills, Calif., to 14420 Crenshaw Blvd., Gardena, Calif.

Hartz, G. Richard, PCO '55; 4710 Locust St., Philadelphia 39, Pa.

Hawkins, Robert D., from 939 Las Palmas Drive, to 206 W. Anapamu St., Santa Barbara, Calif.

Helak, Joseph J., KCOS '56; 301 E. Illinois St., Kirksville, Mo.

Hempsey, Joseph A., PCO '55; 1001 Old Lane, Drexel Hill, Pa.

Hendricks, George W., Jr., from Allentown, Pa., to Freeport Hospital, Freeport, L.I., N.Y.

Henson, Fred A., KC '56; Houston Osteopathic Hospital, 5115 Montana Blvd., Houston 6, Texas

Herman, W. E., from 623 E. 12th St., to 3718 Ingersoll Ave., Des Moines 12, Iowa

Hillegas, Gordon L., PCO '55; Route 2, Willow Street, Pa.

Hinders, Alvin, DMS '56; Grand Rapids Osteopathic Hospital, 1919 Boston St., S.E., Grand Rapids 6, Mich.

Hinsberg, William D., Jr., KC '56; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.

Ho, Robert, DMS '56; West Side Osteopathic Hospital, 1253 W. Market St., York, Pa.

Humbert, Franklin Carrick, KCOS '56; 801 Syracuse-Kemper Bldg., Syracuse 2, N.Y.

Humphreys, Norton, COPS '55; 2330 Newport Blvd., Costa Mesa, Calif.

Hurd, Douglas B., CCO '56; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.

Hutchins, John P., from Arcadia, Calif., to 1037 E. Pacific Coast Highway, Wilmington, Calif.

Hyman, Howard H., from Brooklyn, N.Y., to 354 Lincoln Ave., Rockville Center, L.I., N.Y.

Hymowitz, Max, from 4657 Santa Monica Blvd., to 2000 N. Gramercy Place, Los Angeles 28, Calif.

Judd, Arza Dee, from Fort Walton Beach, Fla., to 143 Grant Drive, Lido Beach, Sarasota, Fla.

Kareus, Lawrence D., COPS '55; 307 W. Third, Box 428, Palisade, Colo.

Karlton, George C., from Fort Lauderdale, Fla., to Little River Clinic, 498 N.E. 78th St., Miami 38, Fla.

Katz, Robert, CCO '56; 3225 Rochester, Detroit 6, Mich.

Keighley, Dale G., DMS '56; 101 Pointview Ave., Dayton 5, Ohio

Kempe, Walter F., Jr., KC '56; Oklahoma Osteopathic Hospital, 744 W. Ninth St., Tulsa 5, Okla.

Kennedy, Forrest L., from 1000 Montgomery St., to 4916 E. Belknap Ave., Fort Worth 11, Texas

Kent, Joye Dantaise, from Fairview Park, Ohio, to 5251 Lee Road, Maple Heights, Ohio

Keyes, Robert V., from Clare, Mich., to 837 W. Midland Road, Auburn, Mich.

King, Nelson D., from Boston, Mass., to 1011 S. Cottage Grove Ave., Kirksville, Mo.

Kostick, Eugene M., KC '56; Lancaster Osteopathic Hospital, Lancaster, Pa.

Koudele, Charles J., KC '56; 2757 Charlotte St., Kansas City 9, Mo.
Kraut, Ben, KC '56; Osteopathic Hospital of Kansas City, 926 E. 11th St., Kansas City 6, Mo.
La Marr, Daymond, from 908 S. Atlantic Blvd., to 919 S. Garfield Ave., Los Angeles 22, Calif.
Lamb, Richard F., from Kirksville, Mo., to 4610 E. Eighth Ave., Denver 20, Colo.
Lanham, Donald M., from Mount Shasta, Calif., to 1205 E. Chapman Ave., Orange, Calif.
Larabee, Henry V., KC '56; 1218 White Ave., Kansas City 26, Mo.
Lazarou, Louis Michael, PCO '55; 4777 E. Third, East Los Angeles 22, Calif.
Leahy, Edward F., from St. Louis, Mo., to 809 S. Florissant Road, Ferguson 21, Mo.
Levitt, Robert B., COPS '55; 11616 Otsego St., North Hollywood, Calif.
Lipton, Nathan, from 58 Martin Place, to 3000 Rochester Ave., Detroit 6, Mich.
Liptrap, William Herbert, COPS '55; 6265 Skyway Blvd., Paradise, Calif.
List, John W., COPS '55; Box 548, Yucaipa, Calif.
LoMonaco, Joseph Anthony, COPS '55; 124 W. Columbia St., El Monte, Calif.
Lopez, Raymond Roy, COPS '55; 124 W. Columbia, El Monte, Calif.
Lurie, Edward J., from Bay Pines, Fla., to 5441 Seminole Road, Largo, Fla.
MacEwing, Bruce A., from 1081 Atlantic Ave., to 1487 Atlantic Ave., Long Beach 13, Calif.
MacFarlane, John T., from 57 Glenwood St., to 6 Pleasant St., Malden 48, Mass.
Magen, Myron S., from Dallas, Texas, to 1920 Army Post Road, Des Moines 15, Iowa.
Mahoney, Glen Clifton, COPS '55; 26309 S. Western Ave., Lomita, Calif.
Malone, Edward Ray, from Main & A Sts., to 123 E. W. C. Rogers Blvd., Skiatook, Okla.
Manley, Louis J., DMS '56; Grand Rapids Osteopathic Hospital, 1919 Boston St., S.E., Grand Rapids 6, Mich.
Mantle, Albert E., from 2806 N. Franklin Ave., to 1713 N. Franklin Ave., Flint 6, Mich.
Marinelli, Dante E., COPS '55; 2326 Moss Ave., Los Angeles 65, Calif.
Marquardt, Roger R., from Pickford, Mich., to Box 603, Longmont, Colo.
Martin, Frederick A., from Clarence, Iowa, to Fonda, Iowa
Mason, Palmer H., Jr., KCOS '56; Donovan Osteopathic Hospital, Raton, N. Mex.
Mastron, Victor, from Lynwood, Calif., to 2156 Santa Fe Ave., Los Angeles 58, Calif.
Matez, Murray N., PCO '56; Metropolitan Hospital, 300 Spruce St., Philadelphia 6, Pa.
Mattocks, Walter E., from 531 E. Roosevelt Road, to 2355 Pacific Ave., Long Beach 6, Calif.
Mayer, Joel S., CCO '56; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.
Mays, Robert C., from 3631 Fifth Ave., N., to 3831 16th St., N., St. Petersburg 4, Fla.
Mazzola, Gus J., KCOS '56; 1100 E. Orange St., Lancaster, Pa.
McCowan, William Dick, COPS '55; 2411 N. Broadway, Los Angeles 31, Calif.
McGowan, Patricia Julianne, KCOS '56; Saginaw Osteopathic Hospital, 515 N. Michigan Ave., Saginaw, Mich.
Metzman, Milton, PCO '56; 2915 N. Fifth St., Philadelphia 33, Pa.
Meyers, Henry J., KC '56; 435 The Paseo, Kansas City 6, Mo.
Miller, Donald Warren, COPS '55; 940 N. Fulton St., Fresno 4, Calif.
Miller, Waldo B., from Kirksville, Mo., to McLaughlin Osteopathic Hospital, 619 Townsend St., Lansing 15, Mich.
Mills, Leonard W., from 300-07 Red River Natl. Bank Bldg., to 300 Commercial Exchange Bldg., Grand Forks, N. Dak.
Mirkin, Herman, DMS '55; 809 N. Stoneman Ave., Alhambra, Calif.
Mischenko, Nicholas J., from Clayton, N. J., to 423 Water St. Conneaut Lake, Pa.
Mishkin, David, from 1722 S. Hauser Blvd., to 1438½ S. Beverly Drive, Los Angeles 35, Calif.
Moore, George S., from 1810 W. 45th St., to 126 E. 65th Terrace, Kansas City 13, Mo.
Morris, Morton, KCOS '56; Flint Osteopathic Hospital, Inc., 416 W. Fourth Ave., Flint 3, Mich.
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O'Hara, Robert Ross, COPS '55; 2035 Saviers Road, Oxnard, Calif.
Olson, Lyle C., from Wyandotte, Mich., to 3272 West Road, Trenton, Mich.
Orr, Thomas A., from 1535 E. Sixth St., to 205 W. Sixth St., Okmulgee, Okla.
Owen, Paul R., from Erick, Okla., to 1819 S. Brownlee, Corpus Christi, Texas
Parshall, James P., KCOS '56; 4429 Croissant, Dearborn, Mich.
Parsons, Gordon S., from Hyannis, Mass., to 478 Middle St., Portsmouth, N. H.
Pasek, John H., from 205-10 Farmers Bank Bldg., to 205-10 First Natl. Bank Bldg., Minden, Nev.
Patton, Robert W., from Drexel Hill, Pa., to 6833 Chestnut St., Upper Darby, Pa.
Pearson, Craig, KC '56; 500 Brooklyn Ave., Kansas City 24, Mo.
Pedinoff, Seymour, from 701 N. Sixth St., to 600 State St., Camden 2, N. J.
Perry, D. Wayne, from San Leandro, Calif., to 5411 S. Central Ave., Los Angeles 11, Calif.
Pettinelli, Frank P., PCO '55; 900 Reed St., Philadelphia 47, Pa.
Philips, L. A., from 24 S. Boyd St., to 165 S. Lakeview Ave., Winter Garden, Fla.
Pierce, Albert E., from 4978 N. Federal Blvd., to 4972 Federal Blvd., Denver 11, Colo.
Pignato, Frank, KCOS '56; 514 E. Fillmore, Kirksville, Mo.
Piserchio, John, Jr., from 4701 E. Ninth Ave., to 7575 W. 14th Ave., Denver 15, Colo.
Plasencia, Hugo, COPS '55; 122 S. Lake St., Los Angeles 57, Calif.
Pleak, Barbara Ellen, from 407 Ferguson Bldg., to 605-07 E. Capitol Ave., Springfield, Ill.
Pollock, C. E., from Route 2, Box 569, to Route 2, Box 452, Mesa, Ariz.
Polsinelli, Jerry, from 12523 Third Ave., to 21541 W. McNichols Road, Detroit 19, Mich.
Polonsky, Gerald Edward, COPS '55; 3450 W. 43rd St., Los Angeles 8, Calif.
Poppe, Herman E., from Lansdowne, Pa., to 2201 Philadelphia Savings Fund Bldg., 12 S. 12th St., Philadelphia 7, Pa.
Posner, Irwin B., DMS '56; Pontiac Osteopathic Hospital, 50 N. Perry St., Pontiac, Mich.
Pracht, Robert, KC '56; Lakeside Hospital, 2801 Flora Ave., Kansas City 9, Mo.
Pratt, Edward Wallace, from 724 New York Ave., to 1030 N. Seventh St., Sheboygan, Wis.
Purdy, Victor W., from 725 Caswell Bldg., to 1605 N. 58th St., Milwaukee 8, Wis.
Rascoe, Kenneth A., COPS '55; 1036 Manhattan Beach Blvd., Manhattan Beach, Calif.
Reese, Samuel A., from Times Bldg., to 2800 Pacific Ave., Long Beach 6, Calif.
Reiss, Bertram, COPS '55; 6011 Fallbrook Ave., Woodland Hills, Calif.
Relich, Victor, from 1550 San Pablo Ave., to 11272 San Pablo Ave., El Cerrito, Calif.
Reuter, Edward C., from Garden City, Mich., to 708 Church St., Plymouth, Mich.
Reynolds, Paul J., KC '56; 2837 S. W. 44th St., Oklahoma City 9, Okla.
Rich, Aubrey D., KCOS '56; Garden City-Ridgewood Hospitals, 30548 Ford Road, Garden City, Mich.
Rich, Dominic R., from 1001 Santa Fe St., to 1802 Morgan, Corpus Christi, Texas
Richter, Emanuel, from Los Angeles, Calif., to 1401 Whittier Blvd., Montebello, Calif.
Riley, Thomas Leland, COPS '55; 801A S. Almansor St., Alhambra, Calif.
Rodgers, William H., from Donna, Texas, to 3506 Ayers St., Corpus Christi, Texas
Roehr, C. Wallace, from 1020 Seaboard Bldg., to 13014 12th Ave., S.W., Seattle 66, Wash.
Rolles, M. John, from Cuddapah District, South India, to Lincoln House, West Road, Guildford, Surrey, England
Rooney, Raymond F., KC '56; Green Cross General Hospital, 1900 23rd St., Cuyahoga Falls, Ohio
Rose, Lester G., KC '56; Community Medical Center, 201 Hawthorne Ave., North Sacramento 15, Calif.

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*Kaufman, W.: The Use of Vitamin Therapy to Reverse Certain Concomitants of Aging, *J. Am. Geriatrics Soc.* **3**:927, 1955.

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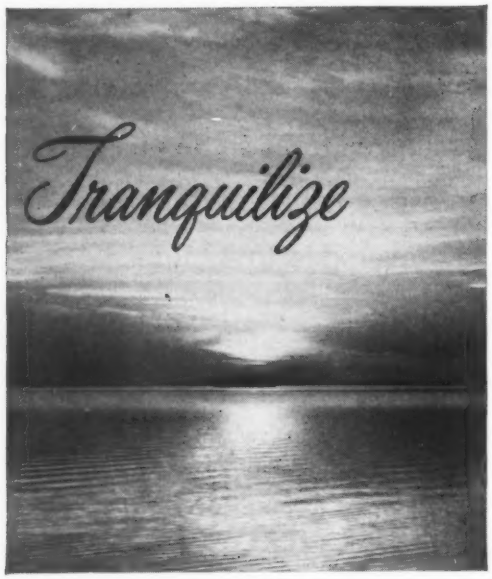

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Russell, Euna M., from 3 Brown St., to 131 Bridge St., Salem, Mass.
Ruza, Paul L., DMS '56; Rocky Mountain Osteopathic Hospital, 4701 E. Ninth Ave., Denver 20, Colo.
Ryle, William Wayne, KCOS '56; Grandview Hospital, 405 Grand Ave., Dayton 5, Ohio
Savage, Woodrow W., from Tulsa, Okla., to 118 McKenna, Poteau, Okla.
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Shafer, Clem L., from Holter Block, to 700 11th Ave., Helena, Mont.
Shafer, Clem L., Jr., from Holter Block, to 700 11th Ave., Helena, Mont.
Shaffer, James R., from Mountain View, Mo., to 614 Euclid Ave., Des Moines 13, Iowa
Shea, Joseph F., from Sun Valley, Calif., to 7536 Laurel Canyon Blvd., North Hollywood, Calif.
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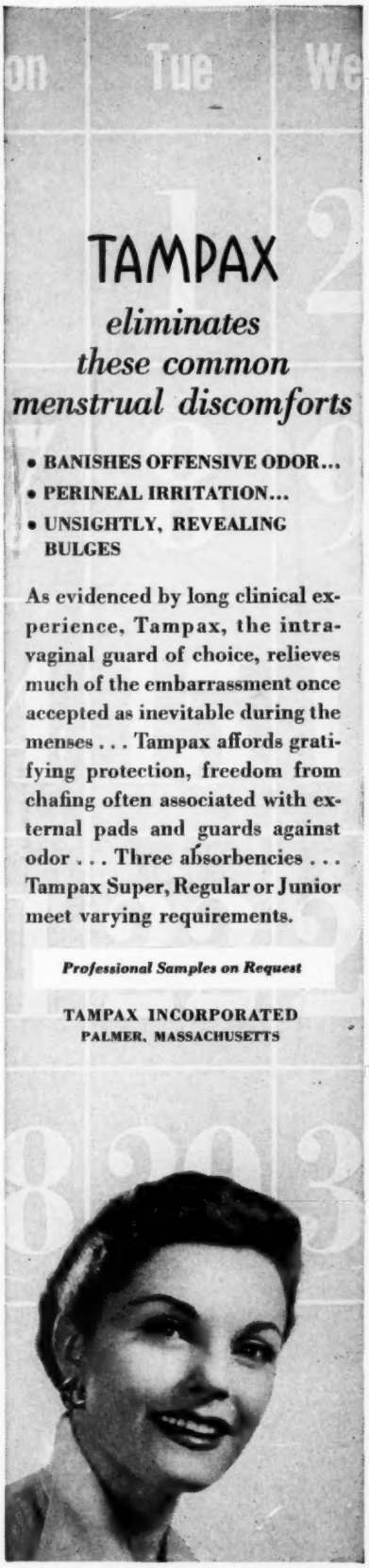
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1. Ende, M.: Am. Pract. & Dig. Treat. 6:710 (May) 1955.

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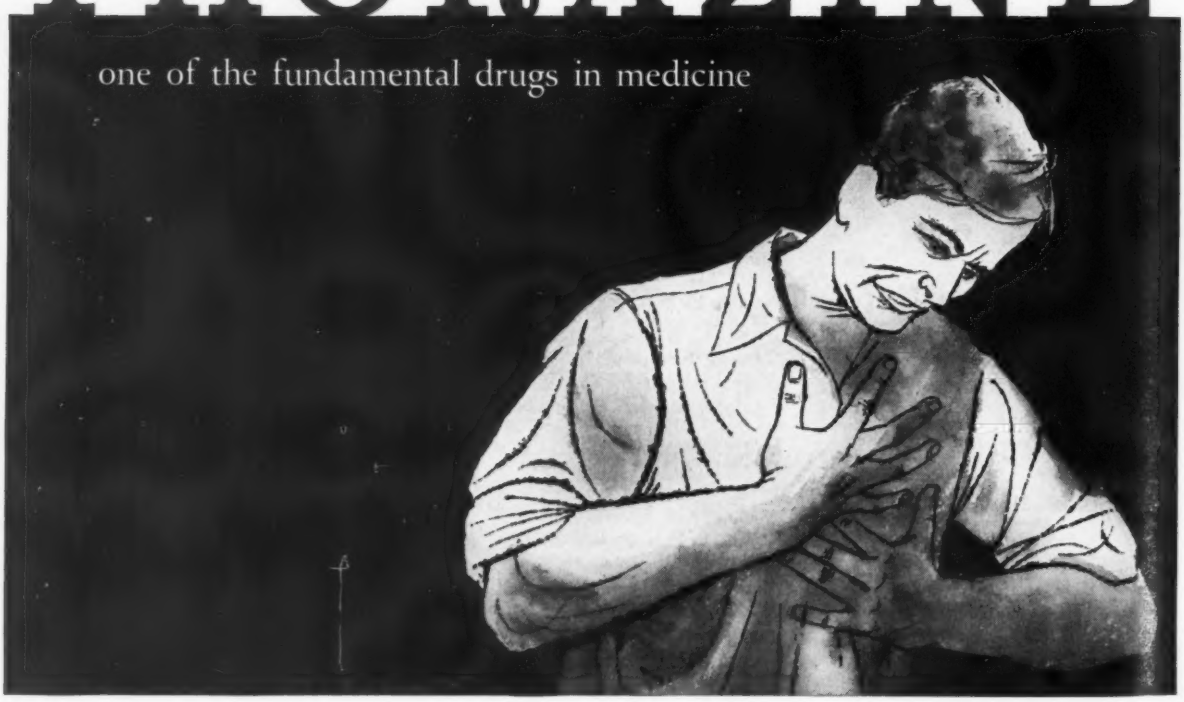

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1. Locket, S.: Brit. M.J. *1*:809 (Apr. 2) 1955.

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